ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

ATEWA HIA

CLIMATE CHANGE DIRECTORATE

(NATIONAL REDD+ SECRETARIAT)

EXECUTIVE SUMMARY

The Ghana Cocoa Forest REDD+ Programme (GCFRP) is the premier emission reductions programme fully developed from a 25-year Ghana REDD+ Strategy (GRS) by the Government of Ghana through the Forestry Commission and Ghana Cocoa Board (COCOBOD) with funding support from the Forest Carbon Partnership Facility (FCPF) of the World Bank. The programme seeks to significantly reduce carbon emissions resulting from cocoa expansion into forests through the promotion of appropriate climate-smart cocoa production approaches, including intensification and yield enhancement. The programme spans a mosaic landscape that produces commodities of international and national importance - cocoa, timber, palm oil, and food crops. However, the dominant crop in the landscape and also of national importance is the cocoa from which the programme derives the name "Ghana Cocoa Forest REDD+ Programme".

The National REDD+ Secretariat of the Forestry Commission of Ghana prepared the Environmental and Social Management Plan (ESMP) for the purpose of monitoring and tracking the implementation of activities of the GCFRP. This document is to contribute to a sound, safe and sustainable environment and high social standard relating to the implementation of programme activities. The expectation is that, the strict implementation and compliance to the content of the ESMP will lead to an environmentally safe, high social performance, sound and sustainable programme with little or no adverse impacts on stakeholders as well as the environment. All responsibilities, roles and responsible persons have been identified and presented, and therefore are accountable at all times in the project life.

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LIST OF ABBREVIATIONS

AfDB	African Development Bank
CFU	Colony Forming Unit
CIF	Climate Investment Funds
CLP	Cocoa Life Programme
COCOBOD	Ghana Cocoa Board
CORIP	Cocoa Rehabilitation and Improvement Project
CRI	Crops Research Institute- CSIR
CREMA	Community Resource Management Area
CRMC	Community Resource Management Committee
CSIR	Council for Scientific and Industrial Research
CSO	Civil Society Organisation
DA	District Assembly
EA	Environmental Assessment
EBA	Forest Endemic Bird Area
EMP	Environmental Management Plan
EMT	Executive Management Team
EPA	Environmental Protection Agency
ESAP	Environmental and Social Assessment Procedures
ESIA	Environmental and Social Impact Assessment
ESS	Environmental and Social safeguards
FC	Forestry Commission
FDP	Farm Development Plan
FGRM	Feedback and Grievance Redress Mechanism
FIP	Forest Investment Programme
FORIG	Forest Research Institute of Ghana- CSIR
FP	Focal Point/Focal Person
FR	Forest Reserve
GoG	Government of Ghana
GSS	Ghana Statistical Service
GSWG	National REDD+ Gender Sub-Working Group
HFZ	High Forest Zone
HIA	Hotspot Intervention Area

HMB	Hotspot Intervention Area Management Board
IUCN	International Union for the Conservation of Nature
JCC	Joint Coordinating Committee
LBC	Licensed Buying Company
LULUCF	Land Use, Land Use Change and Forestry
MDAs	Ministries, Departments and Agencies
MESTI	Ministry of Environment, Science, Technology and Innovation
MOFA	Ministry of Food and Agriculture
MMDA	Metropolitan, Municipal District Assembly
MLGRD	Ministry of Local Government and Rural Development
NEAP	National Environmental Action Plan
NEP	National Environmental Policy
NGO	Non-Governmental Organisation
PCIs	Principles, Criteria and Indicators
PLP	Production Landscape Programme
PMU	Project Management Unit
RCC	Regional Coordinating Council
REDD	Reducing Emissions from Deforestation and Forest Degradation
SA	Social Assessment
SEA	Strategic Environmental Assessment
SAP	Safeguards Action Plan
SESA	Strategic Environmental and Social Assessment
SHEC	Sub-HIA Executive Committee
SIS	Safeguards Information System
SRI	Soil Research Institute- CSIR
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
WB	World Bank
WRC	Water Resources Commission
WRI	Water Research Institute- CSIR

1.0 INTRODUCTION

1.1 Background

The Ghana Cocoa Forest REDD+ Programme (GCFRP) is the premier emission reductions programme fully developed from a 25-year Ghana REDD+ Strategy (GRS) by the Government of Ghana through the Forestry Commission and Ghana Cocoa Board (COCOBOD) with funding support from the Forest Carbon Partnership Facility (FCPF) of the World Bank. The programme seeks to significantly reduce carbon emissions resulting from cocoa expansion into forests through the promotion of appropriate climate-smart cocoa production approaches, including intensification and yield enhancement. The programme spans a mosaic landscape that produces commodities of international and national importance - cocoa, timber, palm oil, and food crops. However, the dominant crop in the landscape and also of national importance is the cocoa from which the programme derives the name "Ghana Cocoa Forest REDD+ Programme".

Cocoa is Ghana's most important agricultural commodity, accounting for roughly 57 per cent of all agricultural exports and supporting the livelihoods of about 2.5 million rural farmers and their dependents. Cocoa production is predominant in the High Forest Zone (HFZ) of Ghana. The Western Region holds the largest area of remaining primary forest in Ghana and produces over 50 percent of the country's cocoa beans. However, Ghana's forests have come under severe threat from agricultural expansion, which is the major cause of forest loss, mainly driven by cocoa production. This makes cocoa production the single biggest driver of deforestation in the landscape[1]. Underlying causes for this include limited financial and technical support for sustainable cocoa production leading to expansion into forest areas; legal disincentives to maintaining trees on farms; a lack of land use planning and landscape management; and inadequate collaboration amongst cocoa stakeholders.

In line with the goal of GCFRP, on-the-ground implementation of GCFRP is routed through Hotspot Intervention Areas (HIA) situated within the GCFRP operational area. The Atewa HIA is one of the designated landscapes where GCFRP implementation is underway with the support of a partnership made up of government, private sector, civil society organisations/non-governmental organisations (CSOs/NGOs) and other local stakeholders. The partnership adopts a jurisdictional approach which ensures that all stakeholders across the cocoa sector commit to

[1] Partnership for Productivity Protection and Resilience in Cocoa Landscapes (3PRCL) – Touton https://3prcocoalandscapes.com/about/intro-background

and collaborate on achieving Climate Smart Cocoa which is tied to Ghana's Emission Reduction Programme. Key activities implemented in the HIA include restoration (Enrichment Planting, Modified Taungya System, Trees on Farm), livelihoods improvement interventions and Climate Smart Cocoa. All these interventions are primarily aimed at helping farmers with the necessary ecological and economic investments to ensure sustainable optimum cocoa production.

The United Nations Framework Convention on Climate Change (UNFCCC) requirements as stipulated in the Warsaw Framework for REDD+ recognizes that safeguards are a key part of REDD+ implementation and link the Cancun safeguards to results-based payment. This requires that countries implementing REDD+ should demonstrate how they have addressed and respected safeguards through the implementation of their REDD+ interventions. One of UNFCCC's key priorities is ensuring that social and environmental safeguards are adhered to, throughout the REDD+ process. In addition, since the Carbon Fund via the World Bank will be purchasing the ERs generated from the GCRFP, environmental and social risks associated with the GCRFP activities would be mitigated and addressed using the World Bank safeguards policies and procedures. To comply with the World Bank's safeguards requirements, Ghana has carried out a Strategic Environmental and Social Assessment (SESA) to better understand the environmental and social concerns of the programme, and to better define the necessary mitigation mechanisms and safeguards compliance issues associated with activities to be implemented in the GCFRP. Specifically, it details the risks and opportunities, and identifies the World Bank Safeguards policies triggered. The SESA report resulted in an Environmental and Social Management Framework (ESMF) to guide the implementation of the proposed Emission Reductions (ER) programme. The National REDD+ Secretariat (NRS) of the Forestry Commission (FC) ensures that mitigation measures and recommendations in the ESMF applicable to the ER Programme area are implemented.

Table 1: World Bank Operational Procedures triggered by the GCFRP

World Bank Safeguard Policy	**Potential to be Triggered under REDD+ in Ghana**
OP 4.01: Environmental Assessment	GCFRP will engage in activities that use forest resources in the HIAs and potentially impact other environmental areas. These activities may have environmental impacts on a limited scale, but a safeguards screening checklist has been prepared to screen

	activities under the programme and ESMPs subsequently prepared to guide in addressing or mitigating potential impacts.
OP 4.04: Natural Habitats	Some of the HIAs contain critical ecosystems. GCFRP will enhance the quality of the management of these critical ecosystems and reduce risks associated with cocoa and other agroforestry practices. The ESMP provides guidance on avoiding or mitigating impacts on natural habitats.
OP 4.36: Forests	Forest policy and management are a primary focus of this project, in addition to trees in the agroforestry landscape. The screening done provides guidance on managing forest ecosystems and their associated resource as reflected in the ESMF.
OP 4.09: Pest Management	The project will not directly finance the use of pesticides but will promote integrated pest management (IPM) and climate-smart practices and resilient 'shade' cocoa. The project-specific Pest Management Plan has been prepared. The ESMF provides identification of IPM activities linked to cocoa enhancement activities. In addition, key environmental and social issues and risks associated with chemical applications in cocoa have been analyzed in the ESMP.
OP 4.11: Physical Cultural Resources	The ESMF and Process Framework incorporate screening to ensure that the project would not have any negative impact on sacred sites. Screening of sites for pilot activities will include specific screening under the ESMF.
OP 4.12: Involuntary Resettlement	No involuntary resettlement is expected. However, as part of plans for ensuring that forests are protected and well managed, there will be efforts to reduce encroachment due to the expansion of cultivated areas. These restrictions of access will be negotiated with farmers. Inputs and incentives will be offered to increase agricultural productivity within the historical boundaries of admitted farms. Process Framework will be used to guide and ensure participatory processes during implementation.

This Environmental and Social Management Plan (ESMP) has been developed to guide implementation of activities/interventions in the Atewa HIA with adherence to environmental and social safeguards requirements of the World Bank, as well as the relevant national laws and regulations, policies and institutional requirements.

2.0 GENERAL DESCRIPTION OF ATEWA HIA

2.1 Basic Administration

Located in the Eastern Region of Ghana, the Atewa HIA landscape encompasses seven administrative districts namely: Atewa East, Atewa West, Denkyembour, Abuakwa North, Abuakwa South, Fanteakwa North and Fanteakwa South (Figure 1).

The Atewa East District Assembly is one of the thirty – two districts in the Eastern Region of Ghana; it gained its present status by the Legislative Instrument (LI) 2344 of 2017. It was carved out from the then Atewa District Assembly now Atewa West District Assembly, in the year 2017. Its Capital is Anyinam. The District is bounded on the North by Kwahu West and Kwahu South Districts, On the North-East by Fanteakwa South, Abuakwa South District, to the South East by Kwaebibrim, to the South by Brim North to South West by Atewa West.

The Legislative Instrument (L.I 2343) established the Atewa West District Assembly with Kwabeng as its Capital Town. It used to be part of the then Atewa District Assembly until 21st December, 2017 when the splitting occurred. It is bounded to the south by Kwaebibrem District, to north east by the Birim North District and to the south east by Atewa East District.

Denkyembour District is one of the Thirty-two Districts in the Eastern Region of Ghana with Akwatia as its capital. It was carved out of Kwaebibirem district and was established by Local Government (Establishment Instrument) 6th February, 2012 and Legislative Instrument (LI) 2042. It was inaugurated on 26th June, 2012.

The Abuakwa North Municipal Assembly was carved out of the erstwhile East Akim Municipal Assembly and established by L.I. 2305 of 2017 with Kukurantumi as its capital with a land size of 242km^2. The Assembly was inaugurated on 1st June, 2018. The Municipality is bounded by Fanteakwa North District to the north, New Juaben North Municipality to the south-east, Yilo Krobo Municipality to the east and Abuakwa South Municipality to the west

Established as a District Assembly in the year 1988 with LI 1420 the Abuakwa South District Assembly was elevated to a Municipal status by LI 1878 in 2008. It was in 2018 changed to Abuakwa South by LI 2304, 2018. It is located in the central portion of Eastern Region. The Municipality is bounded by six districts namely Atewa District to the north, West Akim District to

north west, Fanteakwa District to the East, New Juaben Municipal to the south, Yilo Krobo Municipal to the south east and Suhum Municipal to the west. The Municipal capital, Kibi, is 55km from Koforidua, 105km from Accra and 179km from Kumasi.

Fanteakwa North District Assembly was established by the Legislative Instrument (L.I.) 2346 of 2017 with its Capital maintained at Begoro. It is bounded to the north by the Volta Lake, to the north-west by Kwahu South District, south-west by the East Akim Municipal, Lower Manya Krobo Municipal to the east and to the south-east by the Yilo Krobo Municipal.

The Fanteakwa South District Assembly is carved out of the Fanteakwa North District as one of the 38 newly created and upgraded District Assemblies in 2018. Created with LI 2345, the Fanteakwa South District Assembly has its capital as Osino. It was inaugurated on March 15, 2018 alongside other 37 newly created districts. It shares boundaries with Fanteakwa North District to the west, Kwahu South District to the north-west, Abuakwa south district to the south and Atewa East district to the east. It is bounded to the north by the Volta Lake.

Table 2: Administrative districts

Region	**District**	**District Capital**
Eastern	Atewa East	Anyinam
	Atewa West	Kwabeng
	Denkyembour	Akwatia
	Abuakwa North	Kukurantumi
	Abuakwa South	Kibi
	Fanteakwa North	Begoro
	Fanteakwa South	Osino

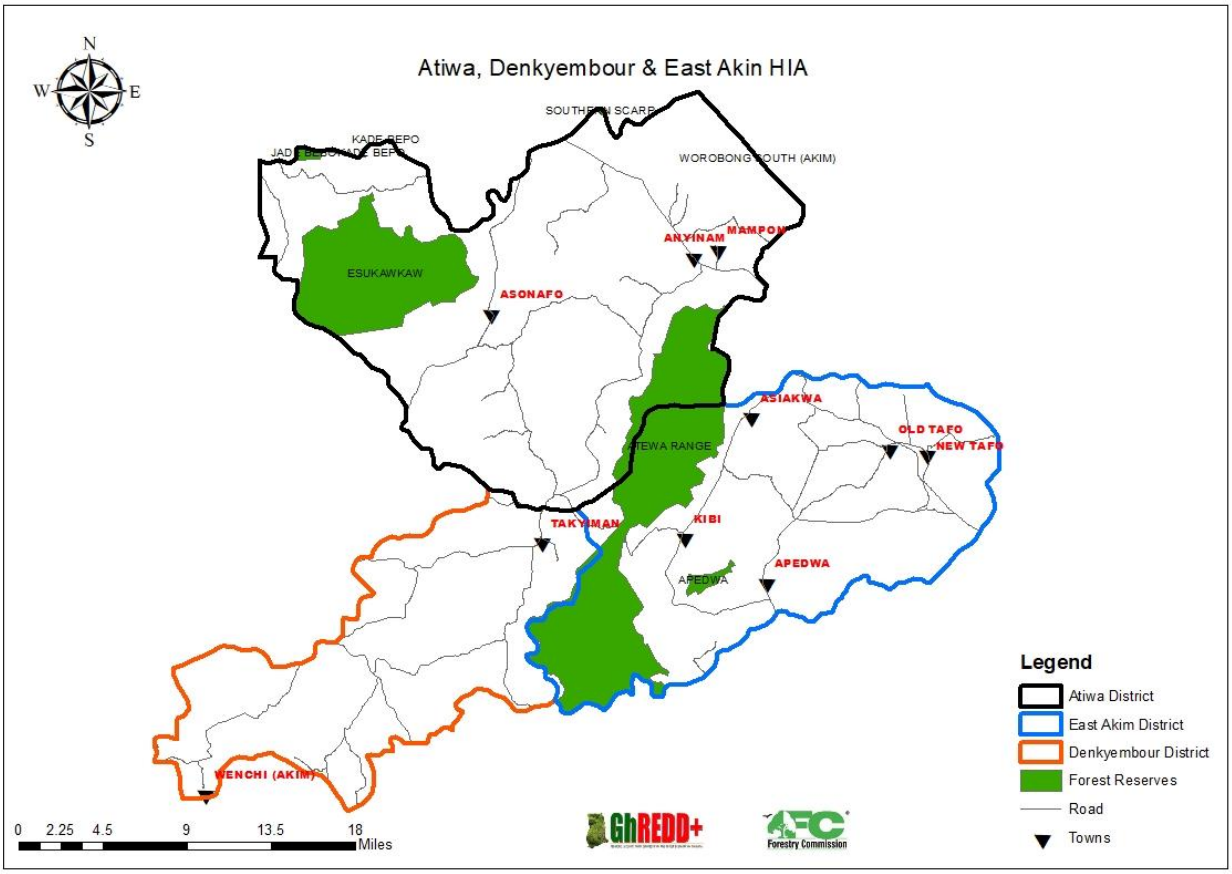

Figure 1: Map of the Atewa HIA

2.2 Socio-economic, geographic and environmental profile

2.2.1 Atewa East and West Districts

Demographics:

The Atewa East district covers a surface area of 625.78 square km. The total population for 2021 according to Ghana statistical service (GSS) is 64,647 with 32,671 males and 21,976 females. Agriculture constitutes the mainstay of the economy of the people within the district, with the total labour force constituting 60% of the population. About 12% of the working population in the District is engaged in trading/commercial activities (buying and selling) of all types of products ranging from foodstuffs to building materials and spare parts. Most of the traders are small size retailers, and trade in defined market places.

According to the Medium Term Development Plan (MTDP) for the Atewa West district, the district covers a total land area of half of 524.91 square km lying between longitudes O° 3‘ West

and O° 50 East and latitudes 6° 10′North and 6° 30′South. The district has a population of 61,219, of which 31,288 are males and 29,931 are females (GSS). Report by the district assembly states there are 48 settlements in the district which comprise of 15 major settlements with more than 1000 people in a settlement while 33 settlements have a population of less than 1000 in a settlement. The landscape is predominantly rural with agriculture being the major economic activity. It is composed of a heterogeneous society with ethnic and cultural diversity with Akyems as the indigenous and dominant ethnic group with Twi being the widely used native language spoken in the landscape. The main economic activities in the district are agriculture, commerce, service and manufacturing in that order. Agriculture is the leading economic activity as expected in rural economy, followed by commerce and service. The contribution of manufacturing is marginal and such activities are usually organized on small scale basis in the private informal sector.

Climatic conditions, Forests, agriculture and livelihoods activities:

The region where the landscape is located is known for its wet, semi-arid climate, which is characterized by a bi-modal rainy season with maxima in April, July, and September and October according to the 2010 census (GSS). Rainfall ranges between 1,250mm and 1,750mm annually. The temperature ranges are a minimum of 26°C and a maximum of 30°C. The terrain exhibits a relative humidity range of 65 to 75 % in the dry season and 75 to 80 % in the wet season. It is situated in a wet, semi-evergreen forest. The Atewa mountains' forest reserves, which are roughly 100 square kilometers in size and contain a variety of timber species and medicinal plants, are popular destinations for ecotourism. Wawa (Triplochiton scleroxylon), Odum (militia excelsa), sapele (Entandrophragma cylindricum), and mahogany (Kaya ivorensis) are a few examples of the species. The Atewa district's most common soil type is often well-drained, reddish-brown, and situated on the comparatively high lands. Mineral deposits (including gold, diamond, bauxite, and kaolin) can be found in the area near Enyiresi, Abomosu, and Kwabeng in the Birim river basin. In addition to kaolin resources in the Atewa Ranges, bauxite and manganese deposits have been discovered in Asamama and the adjacent area.

The district's residents work primarily in agriculture. The environment contains abundant agricultural resources, including huge tracts of land fit for growing crops and raising livestock. The main food crops grown include yam, cassava, maize, plantains, and cocoyam. Cocoa, oil palm, coffee, and citrus are grown as cash crops in the district.

Small-scale manufacturing businesses include Gari processing, oil palm extraction, small-scale mining, sawmills, and bakeries make up the majority of the industrial sector. About 20% of the workforce is employed in the services sector, which includes transportation, hairdressing, dressmaking, and hospitality. In skilled farming, forestry, and fisheries, there are more men than women (63.2% and 51.5%, respectively), however in wholesale and retail trade, there are more females (18.8%) than males (5.3%). Once more, a higher percentage of women (8.7%) than men work in manufacturing (6.5 %). The district's major employer is the private, unorganized sector (91.8%), followed by the public (government) sector (5.0 %). Only 0.2% of the workforce is employed by NGOs and semi-public/parastatal organizations (0.1 %). Similar trends are seen between the sexes, with somewhat more women than men working in the private unorganized sector (94.5 % against 89.1 %). Crop cultivation accounts for the majority of agricultural activities in the district (97.5%), followed by livestock rearing (45.3 %). Fish farming (0.1 %) and tree planting make up less than 1% of agricultural households (0.3 %). Compared to urban agricultural households, a greater percentage of rural agricultural households (98.2%) are involved in crop cultivation (95.9 %). Additionally, livestock rearing is substantially more prevalent in rural (49.6%) than urban areas (35.0 %). The scenery has an admirable potential for the growth of tourism. The District has the ability to generate physical, historical, and cultural variations for conventional tourism.

2.2.2 Abuakwa North and South Districts

Demographics:

The overall land area of this landscape is about 725 km2. According to the 2021 Population and Housing Census, there are 91,297 people living in the Abuakwa North municipality comprising 44,374 (48.60%) males and 46,923 (51.40%) females indicating the dominance of females in the municipality. At a growth rate of 1.9%, population projection for the Municipality in 2024 is put at 96,600 compared with the Eastern Region average growth rate of 2.1% and 2.5% for national. Currently, the population of the Abuakwa South municipality is 92,638 according to the GSS 2020 Population Housing Census. Out of this figure, 43,364 are males and 49,274 are females, representing 46.81% and 53.19% respectively. The population of the Municipality is projected to be approximately 94,604 by 2024 at a growth rate of 2.1% by 2024. About 65% of the working population in these municipalities are engaged in active farming, making it the primary

occupation. Cocoa and coffee are the most significant cash crops grown, followed by basics including cassava, maize, plantain, oil palm, and bananas.

Climatic conditions, Forests, agriculture and livelihoods activities:

According to the medium-term development plan, the region is in the west semi-equatorial zone, which is defined by two primary rainy seasons that begin in May and June and September and October, respectively. The mean annual rainfall is between 125mm and 175mm. Starting in November and lasting through late February, there are separate dry seasons. The average temperature is determined to be quite consistent, ranging from 26°C in August to 30°C in March. Throughout the year, relative humidity is often high, averaging between 70 and 80 % in the dry season and 75 to 80 % in the wet. About 15% of the district's total surface area is made up of forest reserves (about 108.8sq km). Odum (Milicia excelsa), (Wawa) Sterculia rhinopetala, (Ofram) Terminalia superba, (African mahogany) Khaya ivorensis, (Kyenkyen) Antiaris toxicaria , and other commercial tree species are among those found in the forest. The land is generally undulating and rises to about 240 metres to 300 metres above sea level. The various relief features, which range from flat-bottomed lowlands to steep-sided highlands typically covered with iron pans, bauxite, and kaolin, are caused by a variety of distinct types of rock formation. Granite masses that appear in parallel belts are also present. Rivers like the Birim, Densu, and Bompong, all of which have their catchment areas inside the Apedwa Forest Ranges, also drain the landscape. Within the municipality, there are a number of additional seasonal streams. Dendritic flow in a north-south direction dominates the pattern.

The municipality's primary soils are part of the Asikuma—Ansum/Oda Compound Association. The sequence of deep, well-drained, red, gravel-free silty loams and silty-clay loams dominate this soil type. The Peki series is stony, quite shallow, generally well-drained, and brown to reddish yellow in colour. The Oda series, which are alluvial silty clays with limited drainage, are found in the valley bottoms. Food crops farmed in the municipality include cassava, plantains, yams, cocoyam, and maize, as well as cash crops including cocoa, coffee, oil palm, citrus, and cola. If cleared of vegetation, the land in this area is vulnerable to soil erosion.

24.5% of those who are 15 years of age and older are not employed, compared to 67.9% of those who are. 93.1% of those who are economically engaged are employed, while 6.9% are jobless. A greater proportion of individuals who are economically inactive are students (53.2%), while 17.5% take care of their households and 4.8% are unable to work due to illness or disability. Seven out of ten unemployed people are actively looking for work. About 74.3% of those in

employment are skilled workers in agriculture, forestry, and fishing, followed by 24.1 % in service and sales, 16.9% in craft and related trades, and 11.6 % in management, professional, and technical occupations. The district is known to engage in the four primary agricultural activities of crop farming, animal husbandry, fish farming, and tree planting. Crop farming accounts for the majority of agricultural operations, employing 92.6% of the 22,043 agricultural families. Livestock raising is yet another crucial endeavour (35.8 %). Fish farming (0.1 %) or tree planting (0.1 %) account for less than one % of agricultural households (0.4 %). Compared to urban agricultural families, a greater percentage of rural agricultural households (95.7%) are involved in crop cultivation (89.6 %). Additionally, livestock rearing is substantially more prevalent in rural areas (38.4%) than in urban areas (33.3 %).

2.2.3 Fanteakwa North District

Demographics

56,987 people were counted in the district of Fanteakwa North in 2021. 28,857 men make up the entire population, compared to 28,130 women.

The district's ethnic composition is diverse, with the majority being Akans (43.7%), followed by the Ga-Dangmes (40.1%) and the Ewes (7.9%). Northern tribes (Mole Dagbani, Frafra, Kotokoli, Gurma, Grusi and Mande) and Guan account for 5.5% and 2.3% of the district's population, while the remaining 0.5% is made up of other tribes.

Climatic conditions, Forests, agriculture and livelihoods activities:

The District is located between latitudes 6o40' and longitudes '0o32.5' west and '0o10' east. Its average temperature is 24°C and it is located 762 meters above sea level. The district is currently the third largest in the region in terms of land size with a total land area of 1150 square kilometers.

The district is characterized by double maxima rainfall in March to October and November to February respectively with the heaviest rainfall in June.. The district is influenced by both the north east trade winds and the south west monsoon winds. The district generally receives chilly weather and high relative humidity throughout the year, with an average yearly temperature of 24 degrees Celsius. Because of this circumstance, the area became known as "Manchester."

With a few semi-savannah areas in the northern half, the district is primarily a forest zone. About 80% of the district's overall vegetation is composed of the characteristic wet-semi deciduous

forest species. Therefore, this flora is suitable for the growth of both stable food crops like plantains, cocoyam, cassava, maize, rice, and vegetables as well as cash crops like cocoa, coffee, rubber, oil palm, and citrus. The majority of these crops are exported, which helps farmers, the district, and the nation as a whole earn more money.

The district has primarily hilly, rocky terrain with undulating land formations. These land masses are underlain by a variety of parent rocks from which a variety of soils have evolved. The Birrimian formation and Voltarian metamorphic sediment, along with their related rocks like Phyllis, Schist, and Granites, make up the parent rock. The majority of the hills are covered in kaolin, bauxite, and iron pans. These rocks also contain imbedded gold and bauxite. They can be utilized to the district's advantage because they are appropriate for both building and construction purposes. In addition to the huge amount of fertile land being utilized mostly for agriculture, the topography and geology of the local vegetation also allowed for some of the area to be exploited for stone quarries.

The Akrum, Osubin, Amanfuesua, and Dede are just a few of the many rivers that drain the area well. Nearly all of these rivers have seasonal fluctuations, with the majority of them overflowing during the wet season and drying up during the dry. These rivers serve as the primary source of water for domestic purposes.

Five (5) distinct soil formations, including the Atewa-Anum simple formation or association, Nzema-Betwai or Oda compound association, Atewiredu-Kafie simple association, Bediesa-Yaya or Asuani-Atewa complex association, and Nankesi-Akrosi or Nta Offin compound association, have developed in the rocky lands. Generally speaking, the soil in the district is suitable for both food and cash crops such grains, cocoa, coffee, fruits, plantains, cassava, and cocoyam. The cultivation of these crops lessens hunger and poverty in the area while sustaining the food supply. The majority of these crops are sent to other commercial hubs including Koforidua, Accra, and Tema, among others.

The district is predominantly agricultural, with roughly 60.2% of the employed population working in the sector. 14.3% of workers are employed in the service and sales occupational groupings, compared to 10.7% in the craft and allied trades. The occupation with the lowest percentage of workers is clerical support workers, who make up 1.4 % of the workforce, followed by technical and related professionals, who employ 1.0 %, and managerial categories, who make up 1.4 %. About 75% of the population is employed in agriculture, which drives the district's primarily rural economy. The region is well known for producing food crops such cassava, maize, cocoyam, bananas, plantains, and vegetables as well as cash crops like cocoa and oil palm. The

district can be thought of as one of the Eastern Region's "food baskets" for the country. This is due to its extensive landmass of fertile soils, which facilitate the cultivation of many different foods. The district's second-most significant agricultural sector is livestock raising. Sheep, goats, cattle, chickens, and pigs are among the breeds of animals that are frequently raised.

The district's settlement pattern can be characterized as dispersed habitation with distributed buildings. Due to their dispersed location, life in these communities is typically calm and stays the same for a long period. They display traits common to rural locations. Feyiase, Ahomahomaso, and Obooho are a few communities in the district that display this type of settlement layout.

Only the larger towns exhibit a clustered settlement structure, particularly Begoro and Ahomahomaso. On the other hand, some communities have a great concentration of structures in one area, making them more developed than the other settlements. In the district, non-agricultural occupations predominate in urban communities while agricultural activities predominate in rural settlements. Additionally, the settlement layout is nucleated or dense in the urban areas versus being more dispersed in the rural areas.

2.2.4 Fanteakwa South District

Demographics:

The Fanteakwa South District has 57,859 residents as of 2021 PHC. While there are 28,841 women, there are 29,423 men. The district's largest ethnic group is the Akan (43.7 %). Figure 1.13 demonstrates that the majority of Ghanaians in the district (51% are Akans). Ga-Adangbe, with a population of 40.1 %, is the second most common ethnic group in the district. Ewes are next with 7.9 %, then Guan (2.4 %). Less than 7.8% of the population is made up of ethnic groups from the northern region of the nation.

Climatic conditions, Forests, agriculture and livelihoods activities:

It is located between latitudes 6015' north and 6010' south and longitude 0032.5' west. The district's 460 sq km of total land area. The temperature ranges from 24 to 26 degrees Celsius, and the climate is tropical. The annual rainfall ranges from 140 to 180 cm, with the two peak seasons of May to June and September to October seeing the highest amounts. This encourages intensive farming activity during these two times, specifically September to October and May to June. Tall trees with evergreen undergrowth populated by useful trees dominate the vegetation.

The District is located in a semi-deciduous rainforest environment, which results in a high level of rainfall for human usage and agriculture cultivation.

The agriculture industry, which employs about 60 % of the district's economically active population, dominates the district's economy, which is primarily rural (GSS PHC 2010). The majority of household activities are related to agriculture, including raising crops, animals, fish, agroforestry, and non-traditional goods. The majority of the district's agricultural produce is rain fed. The District's primary economic activity, agriculture, employs roughly 60.2% of the population who are economically engaged. Crop farming and livestock production, which employ around 70% of the population who is actively seeking employment, are the two main activities in the agricultural industry. Crop farming accounts for the majority of farming households (98.1%), whereas fish farming accounts for the least amount of farming households (0.1 %).

Service and sales occupation groupings, which account for 14.3 % of all occupations, are the second-largest employer of labor, followed by manufacturing (10.7 %) and entire sale and retail (5.6 %). A very small fraction of the population is employed in activities such as water supply, sewage waste management and cleanup, information and communication, financial and insurance activities, and a wide range of others.

52.6 % of those aged 15 and older and 44.1% of the 50,154 total population are economically active populations. Persons who are economically inactive are entirely committed to caring for elderly and disabled individuals, disabled people, and full-time students. 6,952 people, or around 55.2 % of the population, are not working.

2.2.5 Denkyembuor District

Demographics:

The district had 71,662 residents as of 2021 PHC. There were 39,163 females and 37,866 males among them. The Akyems are the predominant ethnic group in the District, followed by the Ewes and the Krobos. The District's diverse ethnic groups are the consequence of individuals migrating there in search of work in the mining and agricultural industries. There are people in the District who come from many linguistic backgrounds. The most extensively used indigenous languages in the District are Akan and Ewe. The people are also religious, and their practices and beliefs reflect this.

Climatic conditions, Forests, agriculture and livelihoods activities:

Its land area is approximately 520 km2. It is located between Longitude 1.300 N and 1.300 S and Latitude 70.30 W and 70.30 E. The district's main mountain range, the Atewa Range, is located in the north-east, close to the well-known cities of Dwenase and Apinamang. The District's average height, excluding this area, is less than 500 meters above sea level. The District is cut through by the Birim River, which flows from north to south. Other prominent rivers are Mmo, Abanza, Subinsa, Aweasua, and Supong in addition to the Birim River. Temperature ranges between a minimum of 26.5^{0}C and a maximum of 27^{0}C. The District is located in a climate zone with a double maximum rainfall regime that is semi-arid. 414.0mm is the greatest recorded monthly rainfall. Low-lying hardwood species make up the majority of the vegetation in the District, which is surrounded by a semi-deciduous forest zone. Large oil palm plantations have been grown in Okumaning, Kusi, and other areas of the District.

Diamonds are found in reserves in Akwatia, Wenchi, and Topremang. Additionally, the District contains pockets of these priceless minerals that might be mined. There are gold reserves nearby Apinamang as well. The majority of the working population in the Denkyembuor District's economy is employed in the cultivation of food and cash crops on a subsistence and commercial basis. In the area, diamonds are mined for profit.

The District's economy is mostly comprised of trade, commerce, and agricultural-based businesses. People primarily operate in small-scale oil palm processing. People transport agricultural items like palm oil, maize, plantains, etc. out of the neighbourhood and bring in imported goods.

The climate is favourable for agricultural activities in the Denkyembuor District. The District produces a wide range of crops for both money and food. These include plantations of oil palm, cocoa, and oranges. Along with vegetables, food crops such plantains, cocoyam, cassava, and grains are farmed. On a modest basis, animal husbandry is also conducted. The District is home to the Agricultural Research Stations of the University of Ghana and the Oil Palm Research Institute. Large oil palm plantations may be found in the District.

Agro-based industries make up the bulk of the local economy's industrial activity. There are numerous small-scale oil palm processing plants in the area. These are typical in Takorowase, Anweaso, Wenchi, Kusi, and. For further investigation, there is also the Great Consolidated Diamonds Limited in Akwatia, as well as a small-scale mining concession in Apinamang and other places. Boadua has a few small-scale wood-milling facilities. The group that is economically active makes up 69.7% of the population, while the economically inactive group makes up 30%. 94.9 % of the economically active population is employed, whereas a little more than five % of the

population is unemployed (5.1 %). 32.3 % of the working population is employed in skilled agriculture, forestry, and fisheries employment, followed by 19.9 % in service and sales work and 14.9 % in craft and related trade work (15.6 %). This is a bit higher than the 14.9 % made up by plant and machine operators and assemblers. In terms of the distribution of men and women, 34,7% of women work in the service and sales industry, compared to a little more than 5% (5.4%) of men. When compared to their female colleagues, who make up 26.5 %, men work in specialized agricultural and forestry jobs at a rate of 38 %. A little over 11 % of the workforce is employed in manufacturing, mining, and quarrying, followed by 16.1 % in motor vehicle and motorcycle maintenance. About a third (33.4 %) of the workforce is employed in wholesale and retail trade.

Almost nine out of ten people (86.2%) work in the private unregulated sector. Only 7.8 % of all employed people work in the public sector, and only 5.5 % in the private sector. It has been noted that men predominate in the District's official labour market (both public and private informal). Only 5.9 % of public sector workers are female, compared to 9.7 % of men.

Crop cultivation (94,7% of agricultural households in the district) and livestock rearing are the two most common agricultural activities (31.6 %). Only 35 and 14 households, respectively, are involved in fish farming and tree farming in the District. Most households raise birds as their primary livestock, with chicken accounting for the highest percentage at 67.9%. Goat rearing (16.5%) is the most common among ruminants, followed by sheep rearing (6.0 %). Cattle make up about 1% of all raised animals.

2.3 Traditional structures

The traditional authority consists of chiefs, queen-mothers, and sub-chiefs. Traditionally, the people of Atewa HIA are organized in lineage groups under chiefs. A lineage comprises extended families that trace their genealogy to the same ancestor. The extended families also have heads who are most often the oldest male. Property is passed on by matrilineal inheritance. Basically, the traditional authorities administer stool lands, holding them in trust for the people, and arrange the celebration of traditional festivals. They are also the custodians of traditional beliefs and customs, passed on from one generation to another. The traditional authorities also have courts which adjudicate on matters relating to stool lands, lineage and family lands, chieftaincy

title disputes, violations of traditions and disputes between localities, lineages, families and individuals.

2.4 Settlement pattern, livelihoods and markets

The local economy is built on subsistence farming. The main farm products are cassava, plantain, maize, cocoyam, and bananas; citrus fruits and pineapple are also widespread as are vegetables such as tomatoes, garden eggs, cucumber, and okro. Cash crops are the most important source of income for most of the population. Cocoa and oil palm plantations are very widespread in the area. Small-scale mining and hunting are also vital income-earning activity throughout the district as it has been for many generations (Rae & Geo, 2009). Other plantation crops popular in the area are oil palm and citrus. The main food crops are an intercrop of plantain, cassava, cocoyam, maize, yam, and vegetables like pepper, garden eggs and tomatoes. Pure stands of maize, cassava, and rice are also noticeable in most locations (Amanor, 2001). Other supplementary economic activities include artisanal mining, chainsaw operation, hunting, fishing, snail- gathering and group hunting by men in search of game mostly during the dry season (Amanor, 2001).

Abunu and *Abusa* are the main sharecropping arrangements within the landscape. Under the Abunu tenancy, the proceeds from the harvest or the farm may be divided equally between the tenant and the landowner. Before this division, the harvest from cover crops such as plantain and cocoyam are shared equally, usually after sales, between the landowner and the farmer. During the division of the proceeds, the landowner has the first choice of the products as divided. This old practice that goes back to the pre-independence era, places an initial economic burden on the *Abunu* farmer as he/she is solely responsible for all the labour and cost associated with land preparation and cultivation. The continuous improvement in the producer price of cocoa from the early 1990s incentivised cocoa production and this saw a rapid expansion of the Abunu system (Hill, 1963, Ruf, 2011) with natives and non-native farmers practicing it.

In the case of the Abusa, the ratio of the tenant farmer's acreage to that of the landowner is two to one. Again, it is the landowner who has first choice, and in a large number of cases he takes care of the farm and harvests the crops himself. In some cases, however, the tenant farmer is employed to harvest the crop and take care of the farm for one-third of the harvest. In other

cases, an entirely new person may be hired to take care of the farm under similar terms. While this arrangement allows those with fewer resources or social networks to move into cocoa production, it does make sharecroppers vulnerable to the whims of their landlords.

2.5 Traditional practices and social taboos

Traditional practices and social taboos are good examples of informal institutions, where norms rather than governmental juridical regulations determine human behaviour toward the environment. Many of these practices work for the preservation of habitat and ecologically vulnerable resources as well as providing long-term conservation of common property (Ostrom, 1990, Colding and Folke, 2001). Within the Atewa Landscape, traditional practices and taboos play a key role in regulating social behaviour and the sustainable management of natural resources. The analysis of responses from the field survey indicates that several categories of these practices exist though many of them have outlived their usefulness. Five categories of these practices and/or taboos were identified. These include traditional farming practices of conservation significance; bush fire prevention and prohibitions practices; forest and wildlife conservation practices; practices relating to the protection of rivers and fisheries resources; and other traditional practices of socio-cultural significance. The various practices are listed below under each of the categories.

Traditional farming practices of conservation significance

- Gathering weeds around plants to decompose in order to add nutrients to the soil.
- Use of poultry dropping as manure
- Rotational farming practices as a way of soil management
- Observance of selected days as ‘sacred days’ when people are prohibited from going to the farm.

Bush Fire Prevention Practices

- Prohibition of fire on cropped farms
- Creation of fire belts around farms during the dry season
- Ban on indiscriminate bush burning Forest and Wildlife Conservation Practices
- No entry into the forest during festive occasions and on Fridays
- No indiscriminate felling of trees

- No entry into sacred forests without permission
- No hunting on Fridays
- No eating of snails and rats in some communities Protection of rivers and fisheries resources
- No fishing in certain rivers
- No defecation in rivers
- No swimming in certain selected rivers
- Use of chemicals in streams for fishing is not allowed
- No dumping of refuse into rivers
- Water was not fetched from certain streams on Fridays
- Prohibition of farming close to a river

Other traditional practices of sociocultural significance

- No one was allowed to go to the farm during festive occasions.
- No black pot is allowed on the river "Kuku abra"
- No pounding of fufu after 6 pm
- Large bundles of firewood are not carried inside the household.
- No whistling at night
- A woman in her menses is not allowed entry into certain rivers.

The significance of these traditional practices/taboos include natural resources conservation, pollution prevention in rivers, instilling of discipline in the people through the observance of traditional values and norms, pulling off the labour force for 'communal labour' on certain days of the week, and prevention of theft cases on farms on festive occasions.

It is interesting to note that though most of these practices are frowned upon by some Christian groups and modernity, they have been very useful over the years in regulating environmental management and in instilling social order among the people.

2.6 Forests, biodiversity, & threats

Atewa Forest occupies a ridge of land ca. 45 km long and 12 km at its widest covering an area of ca. 258 km2. The altitude of the ridge ranges from 230 to 845m above sea level (NASA 2014) and it is this relatively high elevation that supports the Upland Evergreen forest type of Atewa that

is otherwise rare within Ghana (Hall & Swaine 1976) characterised by Alchornea floribunda, Aspleniumdregeanum, Chidlowia sanguinea, Lophira alata and Peperomia fernandopoiana. Most of the ridge is forested from the lower slopes to the ridge top but the Upland Evergreen forest type occurs above 500 mand this accounts for just under 75% of the forest. The ridge top is a relatively flat plateau where a number of forested swamps occur, and this is where the bauxite deposits are concentrated. The Atewa Range Forest Reserve covers an area of 232 km^2, while the extension (Atewa Extension) is 26.3 km^2. It is the largest of the two Upland Evergreen forests in Ghana. The vegetation is Moist Semi-deciduous forest type with a mean annual rainfall between 1200 mm and 1800 mm, characterized by a two-peak rainy season in April-June and October. A mild harmattan season occurs from November to March, trees in this vegetation type attain an average maximum height of about 45 meters. Birimean rocks underlie Atewa Range Forest Reserve (Hall & Swaine, 1976).

The Atewa Range Forest Reserve is a Globally Significant Biodiversity Area (GSBA) and an Important Bird Area (IBA) and is a Key Biodiversity Area (KBA). It supports over 155 species of birds, 32 amphibians, 575 butterflies, 28 species of large mammals, and 765 different species of vascular plants. It is also the source of three major water bodies in Ghana namely; Ayensu, Birim, and Densu rivers (McCullough et al., 2007). Densu River alone supplies water to at least 5 million Ghanaians living within Accra the nation's capital and its environs, whiles the Ayensu River supplies water to the central region and some parts of the eastern region. However, Birim is also used domestically for irrigational purposes in the eastern region. Despite this status, the forest both inside and outside the Forest Reserve is steadily degrading due to timber and non-timber harvesting and the encroachment of farms and gold mines.

This is affecting water flows and water quality and those dependent on water downstream in the three river basins, including businesses, the households of over 1 million people in Accra, as well as local communities and farmers that live around the Forest Reserve.

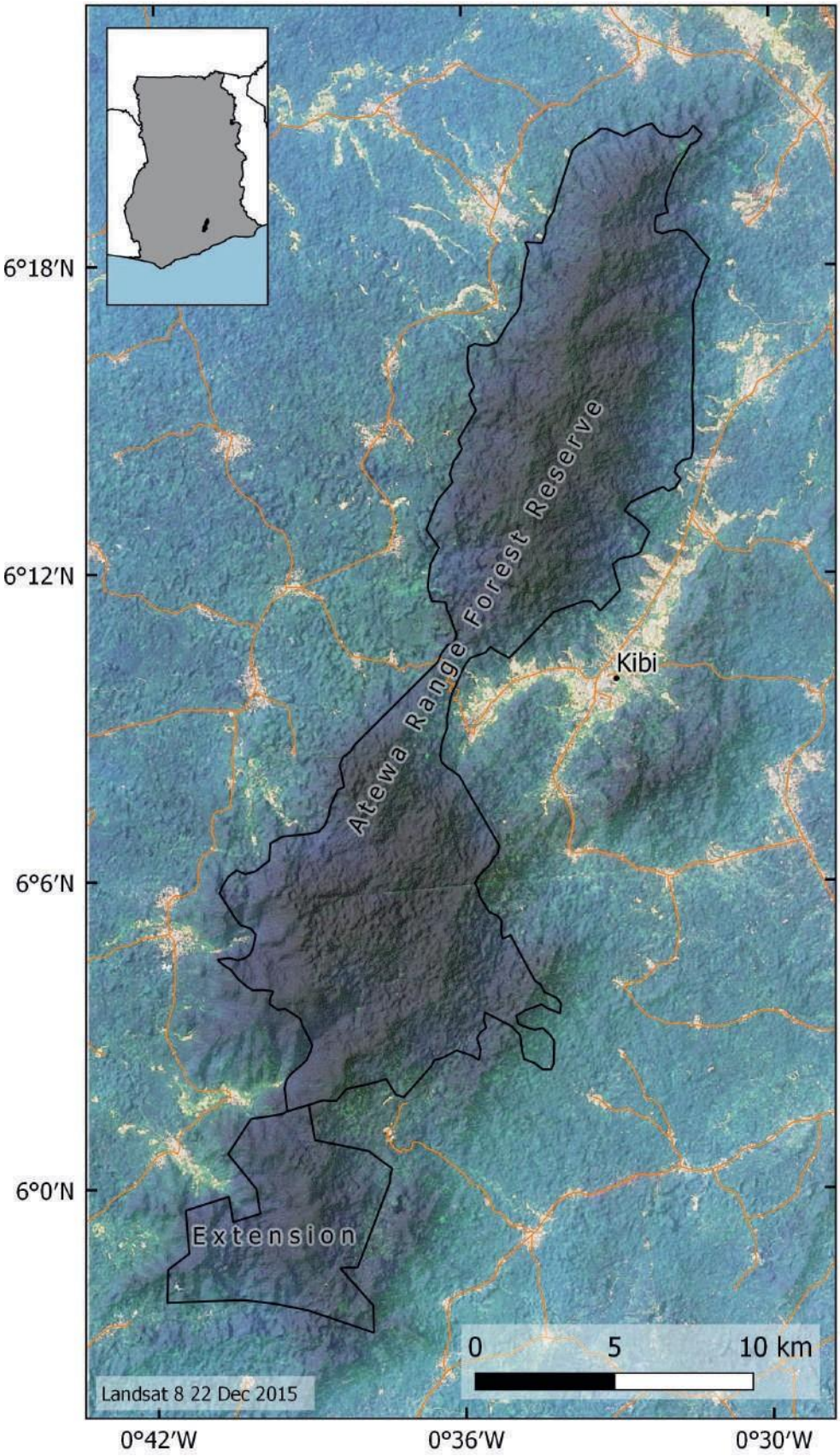

Figure 2: The location of Atewa Range Forest Reserve in Ghana and with relation to the main town of Kibi (Source: ARocha Ghana)

2.6.1 Biodiversity index, Animal sign indices and conservation

Table 3: The number of species recorded in Atewa Forest, in relation to the forest reserve boundary

Location	# species
Strictly inside	2365
Within 500m	2396
Surrounding landscape	2574

Source: ARocha Ghana

Table 4: The proportion of Ghana' s flora and fauna that are found in Atewa Forest (and within 500 m of the boundary), for each major taxonomic group

Group	# in Atewa	# in Ghana	% of Ghana's total
Plants	1134 (969 vascular)	3725[2] (vascular)	26%*
Birds	239	749[3]	32%
Mammals	69	260[4]	27%
Amphibians	40	793	51%
Reptiles	14	178[5]	8%
Butterflies	711	925[6]	77%

Source: Arocha Ghana

Threatened species

Data from Arocha Ghana indicates only 595 of all species recorded in Atewa Forest have been assessed for extinction risk on IUCN's Red List (ca. 25%). Many plants and almost all invertebrates still await assessment. Nonetheless, at least 78 species in Atewa Forest have been classified as globally threatened with extinction (Critically Endangered CR, Endangered EN or Vulnerable VU),

[2]Morat and Lowry II 1997 (vascular plants only)
[3]Dowsett-Lemaire and Dowsett 2014
[4] IUCN RedList downloaded January 2018 (Frost 2018 lists 91 amphibians and AmphibiaWeb, 2018 lists 88)
[5]Uetz et al. 2018 (GBIF lists 201 reptiles for Ghana but this includes some synonyms)
[6] Larsen 2006

* this percentage refers only to vascular plants.

a further 24 are near-threatened (NT) and five species are data deficient (DD)[7]. This total of 107 species accounts for 20% of all species in these categories occurring in Ghana. Another two species known from Atewa are expected to be classified as CR once they are assessed: an endemic plant, Monanthotaxis atewensis and a recently described frog, Afia Birago's Puddle Frog Phrynobatrachus afiabirago. The White-naped Mangabey Cercocebus lunulatus which is currently EN also meets CR criteria (R. Mittermeier in litt.). Aside from the Odonata, all of the major groups that have been assessed in detail include some threatened species. The largest number of threatened species is found amongst plants. Many plants are geographically confined to the Upper Guinea Forests which have reduced dramatically in extent over the last 50 years. The amphibians are the proportionately most at risk with 30% of Atewa's list being threatened or near-threatened.

Table 5: The number of threatened, near-threatened and data deficient species in Atewa Forest

IUCN Red List category	# species
Critically endangered	3*
Endangered	16
Vulnerable	59
Near-threatened	24
Data deficient	5

Table 6: The number of threatened, near-threatened and data deficient species in Atewa Forest in each taxonomic group

Group	CR, EN, VU*	NT	DD
Plants	56	6	
Birds	6	7	
Mammals	7	5	3
Amphibians	5	7	
Reptiles	1		
Fishes	3	1	
Butterfly	1		2

[7] Refer to Annex

Source: Arocha Ghana

Endemic and other notable species

Four or five species are believed to be entirely endemic to Atewa Forest, being found in no other forest in the world: a climbing plant Monanthotaxis atewensis, two butterflies Atewa Dotted Border Mylothris atewa and Anthene helpsi, and the Atewa Hooded Spider Ricinoides atewa. The Atewa population of Togo Slippery Frog Conraua derooi is now considered to be specifically distinct which would also make it endemic to the forest (C. Ofori Boateng unpubl. data). Nine species are named after Atewa Forest in their scientific name and two are named after the alternate name for the range of hills, Kibi. These are four plants Aframomum atewae, Monanthotaxis atewensis, Rinorea kibbiensis and Ochna kibbiensis, two butterflies Anthene atewa and Mylothris atewa, two arachnids Anansus atewa and Ricinoides atewa, and a caddisfly (Trichoptera) Pseudoneureclipsis atewa (Gibbs 2008).

The plant list for Atewa Forest comprises 1134 species. This is a large increase on the number reported for the forest by McCullough et al. (2007). The increase is largely due to the inclusion of specimen data from herbarium collections in Ghana and around the world and the results of a recent field survey of non-vascular plants (Hodgetts et al. 2016). A further 114 plants have been found beyond 500 m ofthe boundary in the surrounding landscape. Although a large number of Atewa's plants (56) are considered threatened, only a small number of all the plants in the forest (104 species) have actually been assessed by IUCN. Priority for assessment will have been given to species considered likely at risk so the 104 species are not a representative sample of all plants. It is therefore hard to know what proportion of unassessed plants will prove to be threatened too. Using the star rating system (Marshall et al. 2016) for vascular plants, 10 species are Black star (global occurrence in mean 2.7 degree squares) and 22 are Gold star (8 squares).

The bird list for Atewa Forest is 239 species. A further 42 open country and aerial species are in the surrounding landscape and many of these will overfly the forest but are unlikely to be resident within the reserve. 152 species recorded in Atewa Forest are restricted to the Guinea-Congo Forest biome (Fishpool & Evans 2001) and are trigger species for the identification of Important Bird Areas. A further 61 species are forest dependent or forest users. Eight species

recorded in Atewa Forest are endemic to the Upper Guinea Forest Endemic Bird Area (EBA), the region west of the Dahomey Gap of Togo and Benin (Stattersfield et al. 1998). These include most of the globally threatened and near-threatened birds in Atewa Forest.

Arocha Ghana reports the number of mammals recorded in Atewa Forest as 69 species. There have apparently been few surveys and low levels of scientific collecting of mammals in Atewa Forest as evidenced by the very few specimens in museums around the world (Grubb et al. 1998, GBIF, J. Decher pers. obs.). There are 37 additional species of mammals that have been recorded in areas around Atewa Forest (Grubb et al. 1998) some of which may also occur in Atewa Forest.

Amphibians are by far the most threatened taxonomic group in Atewa Forest. Of the 40 species that have been recorded, 30% are threatened or near-threatened with extinction. There are many species that are cryptic and poorly known, and likely to be species that remain undiscovered.

There have been few surveys of the reptiles of Atewa Forest so the 14 species recorded is likely to be far from a complete list. The comparatively low proportion of Ghana's reptile diversity recorded in Atewa (8%) compared with other groups may also be because of low survey effort but also the low detectability of many forest reptiles, especially snakes (Ernst et al. 2005). It may also reflect the relatively low diversity, in particular for lizards, in humid forest compared with other habitats in Ghana. By comparison, a survey of Kyabobo National Park in the Togo Hills of Ghana which includes some similar habitats to Atewa Forest reported 19 reptiles in forest habitat and a further 14 in farmbush (Leaché et al. 2006). And in southwest Ghana just 18 species were reported from three lowland forests (Ernst et al. 2005). For the snake fauna however, more than 40 species could be expected for Atewa (see Rödel & Mahsberg 2000). Nonetheless, it is notable that the West African Dwarf Crocodile Osteolaemus tetraspis, which is a globally threatened species (VU), can still be found in the swamps on the Atewa range plateau.

Atewa Forest is one of the most significant forests for butterflies in the region. With 573 species confirmed and 711 species expected to occur, this accounts for 77% of Ghana's entire butterfly fauna, making it the most diverse forest for butterflies in all of West Africa (Larsen 2006) and a popular destination for ecotourists interested in seeing and photographing them. At least two species are known only from Atewa Forest, the Atewa Dotted Border Mylothris atewa and

Anthenehelpsi. An endemic subspecies, Acraea kraka kibi is also confined to Atewa Forest. The celebrated African Giant Swallowtail Papilio antimachus also occurs.

26 species of fishes have been recorded in Atewa Forest. Three of these are threatened or near-threatened, whilst almost half have not been assessed by IUCN. Odonata (dragonflies and damselflies) were surveyed comprehensively in Atewa Forest in 2006 (Dijkstra 2007) and 76 species were reported. Two further species have since been described from specimens collected during that same survey (Dijkstra et al. 2015). None of these are known to be at risk of extinction. However, many of them are dependent on clear flowing water and are likely to have been affected by the impacts of galamsey in the surrounding landscape. 33 species of katydids were recorded in Atewa Forest, also in 2006 (Naskrecki 2007). We were only able to locate 18 moth species recorded in Atewa Forest, but the true number must be many hundreds given the known diversity of this group. All other invertebrate species recorded amounted to just 27 species including members of Trichoptera, Arachnida and Hymenoptera. Of particular note is an arachnid, the Atewa Hooded Spider *Ricinoides atewa*. This was described in 2008 as a new species and named after the forest (Naskrecki 2008). It is the largest known species of Tick Spider (Order Ricinulei), of which 11 ofthe world's 60 species occur in West Africa.

According to A Rocha Ghana, the indices of animal signs were 2.9/hr, 2.67/hr, and 1.41/hr for Asiakwa South, Asiakwa North, and Atiwiredu respectively. Asiakwa North recorded the highest index of illegal activity (i.e. total number of signs of illegal activities encountered per hour of the survey) of 1.87/hr, followed by Atiwiredu with 1.07/hr and Asiakwa South, with 1.05/hr.

2.8 Hydrology and water quality assessment of the HIA

Water quality assessment done for the HIA by A Rocha Ghana covered four parameters, namely, PH, Turbidity, Temperature, and Dissolved Oxygen, from February to November 2022. Parameters such as Temperature, PH, and Dissolved Oxygen remained steadily low from February through to November 2022. However, high water turbidity was recorded at the Ghana Water Company Birem Abstraction Point - Kibi (High >1000 NTU: September and Low < 66.6 NTU: June). Ghana Water Company Birem Abstraction Point – Osino (High >1000 NTU: March, May, August, September, October and Low > 424 NTU: November) Ayensu Stream - Anum Apapam, (High>1000 NTU: May and Low < 3.2 NTU: February, March). Ghana Water Company Densu Abstraction Point – Densuso (High > 945 NTU: March, and Low <27.5 NTU: February). These

turbidity values are far above the World Health Organization (WHO) standard (5 NTU) suitable for human consumption. However, the Birem Stream - Atewa Forest Reserve, Densu Stream - Atewa Range Forest Reserve, Densu Stream - Potroase, Ghana Water Company Awusu Abstraction Point - Kwabeng**,** Supon Stream - Atewa Range Forest Reserve, Subri Stream - Atewa Range Forest Reserve, Wankobi Stream - Atewa Range Forest Reserve, Akwadru Stream - Apampatia and Ayensu Stream - Atewa Range Forest Reserve had relatively low turbidities (Range: min < 0 NTU, max < 100 NTU).

2.9 Activities/Interventions in Atewa HIA

2.9.1 Restoration Activities

Restoration consists of activities that lead to tree planting in on-reserves and off-reserve areas. Under the emission reduction programme three main restoration activities are recognised in the HIA namely: Modified Taungya System (MTS), Enrichment Planting and Trees on Farm (ToF).

2.9.1.1 Modified Taungya System (MTS)

This is a system of agroforestry practice where farmers from fringe communities of Degraded Forest Reserves are allocated degraded areas on reserve to undertake plantation development. In this system, farmers provide labour for the site preparation, pegging, planting and tending of the plantation. The Forestry Commission provides logistics (including pegs, tree seedlings and some other farming tools as well as protective clothing) and technical support to the farmers. Farmers are allowed to grow food crops along with the tree seedlings and harvest the crops for themselves whiles tending the tree seedlings for three to four years when tree canopy closes and crop production becomes impossible under the shade. A Benefit Sharing Plan (BSP) has been instituted for the MTS with a proportion of 40%: 40%: 15%: 5% to Farmers, Forestry Commission, Community and Traditional Authorities respectively.

The selection of a community or farmer group for the MTS are based on the following criteria among others:

I. Proximity to the planting site: Since the plantation establishment is labour intensive especially during activities such as site preparation, selection of communities or farmer group is based on their proximity and thus those fringing the Forest Reserves are selected. Another reason is that communities are responsible for ensuring that the

plantation and the Forest Reserve as a whole is protected from wildfire, illegality, etc. and so communities fringing the reserve are mostly selected.

II. Willingness to participate: As per the Benefit Sharing Plan, proponents are responsible for their individual roles, thus it requires a willing farmer or a community who understand and are willing to invest and wait for the returns in a long term. Some farmers would prefer to be paid for their labour and forfeit future returns.

III. Previous experience: With the implementation of MTS in Ghana nearing two decades, the FC has had myriad interactions and engagements with communities fringing Forest Reserves and have institutional memory of committed communities based on their past performance. Thus, the selection criteria of farmers also include past community performance in MTS establishment including their ability to protect previous plantation stands established.

IV. Ability to work on the farm: Selection of farmers are also based on their age and health conditions. Strong adults and youth are preferred regardless of the gender.

2.9.1.2 Enrichment Planting

Enrichment planting is undertaken in a fairly degraded forest with the aim of increasing tree cover by planting tree seedlings within the forest. This plantation model has introduced valuable species to degraded forests without the elimination of valuable individuals already present. In Enrichment Planting, strips of 5-6-meter width are cut through the degraded portions of the compartment along which tree seedlings are planted and nurtured to increase tree density. This work is done under the supervision of Forestry Commission.

2.9.1.3 Trees on farms (ToF)

This system of carbon stock enhancement focuses mainly on cocoa farms in off-reserve areas that are unshaded or not fully shaded according to the right regime. Farmers are supported to incorporate trees on their farms to ensure sustainable yield whilst at the same time contributing to climate change mitigation. By incorporating trees on their farms, they contribute to carbon stock enhancement, which serves as a carbon sink.

In executing this model, COCOBOD and private sector cocoa companies support ToF implementation since it falls directly into their remit although under strong coordination and partnership with the Forestry Commission. Farmers benefit from agricultural extension services as well as supervision and logistical support.

2.9.2 Climate- Smart Cocoa

Climate-Smart Cocoa (CSC) consists of farm-level activities that lead to increased resilience, carbon sequestration and general improvement in the livelihood of farmers. At this, a number of REDD+ partners in the HIA including COCOBOD and the private sector cocoa companies undertake climate-smart related activities. The Ghana Cocoa Board generally term their version of CSC as Productivity Enhancement Programme (PEP). COCOBOD since 2017 has rolled out the PEPs to shore up cocoa production in the country and consolidate its position as the leading producer of premium quality cocoa beans in the world. The objective of the PEPs is to roll out a set of measures that will improve productivity per hectare and increase cocoa production levels well above 1 million metric tonnes per year (versus an average of 800,000 tonnes per year over the last ten years). The PEPs mainly entail measures to sustainably increase plant fertility; develop irrigation systems; rehabilitate aged and disease-infected farms; increase warehouse capacity; and create an integrated farmer database. Some of the activities under PEP include the following:

1. Cocoa Rehabilitation Programme
2. Cocoa Diseases and Pest Control Programme (CODAPEC)
3. Cocoa HiTech (Fertilizer) Programme
4. Free Hybrid Cocoa Seedling Distribution
5. Artificial Hand Pollination
6. Mass Cocoa Pruning
7. Cocoa Management System (CMS)
8. Irrigation

1. Cocoa Rehabilitation Programme

Under this programme, COCOBOD bears the full cost of the two-year rehabilitation process which involves the cutting of cocoa trees affected by the Cocoa Swollen and Virus Disease (CSSVD), treating whole farms and replanting them with disease-tolerant, early bearing, and high yielding cocoa hybrid cocoa seedlings as well as complementary plantain suckers to provide temporary shade for the young cocoa seedlings and recommended desirable shade tree species to provide permanent shade for the newly established cocoa.

2. Cocoa Disease and Pests Control (CODAPEC)

COCOBOD introduced the CODAPEC programme (Mass Spraying) in 2001/2002 to control black pod disease and mirids (capsids) to prevent their effects on cocoa production. The programme comes at no cost to the farmer. Only mapped farms in good condition are considered under this exercise. COCOBOD takes full responsibility of carting chemicals to the regions and districts for onward distribution to farmers through various task forces in districts and communities. The chemicals are allocated to farmers to arrange with supervisors of spraying gangs to plan spraying schedules to spray their farms. There are 2 components involved:

- Capsid control
  i. A 7-member spraying gang (supervisor inclusive) ensures two (2) rounds of insecticides application in April/May and September/October respectively.
  ii. Cocoa farmers are then expected to complement the first two (2) rounds with additional two (2) rounds in June and December within a cropping year.
- Black pod Control
  i. The first three (3) rounds of fungicides application spraying are carried out between 3-4 weeks' intervals by COCOBOD in June, July and August/October.
  ii. Cocoa farmers are encouraged to work closely with the gang to identify which periods within the intervals to complement with additional three (3) rounds application of the fungicides.

3. Cocoa HiTech Programme

Management of Ghana Cocoa Board (COCOBOD) re-introduced the Subsidized Fertilizer Programme following evidence of widespread theft, nepotism, favoritism diversion and smuggling which characterized the then 'Free Fertilizer Programme' some years ago. The aim of the fertilizer distribution was to restore soil nutrients depletion to enable a smooth process during cocoa production. The Subsidized Programme, which makes use of the private sector in the distribution processes, seeks to ensure availability, equity, and transparency. The introduction of this new scheme, with active private sector participation, has also helped to create jobs to boost economic growth in the country. Generally, the Cocoa HiTech Programme has a number of benefits including:

- cutting off the needless politicization, nepotism and theft that hitherto characterized the distribution of fertilizers.

- stimulating an industry that is one of Ghana's top earners of foreign exchange and accounts for about 7 % of gross domestic product.
- eliminating market distortions as well as steps to map cocoa farms and soil, improving sector management, upgrading ports and storage facilities and rehabilitating ageing trees.
- enhancing access of the ordinary cocoa farmer to the right fertilizer which will help stimulate productivity and increase livelihood.
- promoting a subsidized programme, which makes use of the private sector in the distribution processes, ensures availability, equity, and transparency.

The mode of distribution of the farm inputs is done through the following processes:

- Farmer based Cooperatives are formed, in order to facilitate equitable distribution of fertilizers. Each farmer must belong to a community farmer based corporative.
- Cooperatives then must apply for the subsidized fertilizers at COCOBOD. Farmers can therefore apply through these approved farmer-based cooperatives.
- Farmers are given a one-year moratorium for the payment of the subsidized fertilizers.

4. Free Hybrid Cocoa Seedling Distribution program

Every year, Ghana Cocoa Board (COCOBOD) through the Seed Production Division (SPD) raises disease-tolerant hybrid cocoa seedlings for distribution to farmers free of charge. The initiative is aimed at increasing cocoa production and incomes of cocoa farmers.

Distribution of the seedlings to farmers is mostly done from May – July every year to enable farmers plant them. The mode of distribution takes the following process:

- The seedlings are raised by the Seed Production Division (SPD) at over 380 nursery sites established in communities across the cocoa regions.
- The Cocoa Health and Extension Division (CHED) distributes the seedlings using farmer data.

5. Artificial Hand Pollination Programme

Cocoa Artificial Hand Pollination started in 2017 against the background that cocoa is naturally pollinated by insects called midges, but with only an average of 10-20% of flowers being pollinated, whilst about 80-90% is aborted. The hand pollination exercise was originally restricted to seed-gardens but has now been extended to farms to boost yield. The selection

criteria of cocoa farms for hand-pollination include hybrid farms; farms that are between 8-20 years; farms free from Cocoa Swollen-Shoot Virus Disease (CSSVD); and accessibility. In addition, farmers must be willing to maintain their farms by brushing regularly, pruning, controlling pests and diseases, as well as the willingness and preparedness to apply the required amount of fertiliser to help achieve the desired results of increased productivity. The artificial hand pollination exercise has been undertaken in some farms and is still ongoing at a steady rate within the Atewa landscape.

- The processes involved are detailed below: A farm earmarked for pollination must be pruned two months before it is pollinated
- Transfer of pollen grains is aided by forceps and containers
- Application of fertilizers is essential to support pod setting and development

6. Mass Cocoa Pruning Programme

A strategy to prune all productive cocoa across all cocoa growing regions and districts. To this end COCOBOD has supplied 100,000 motorized pruners to various farmer cooperatives to encourage pruning and weeding/slashing as pruning is the master key that unlocks flowering in cocoa to aid flowering and pod setting. It also helps to reduce the incidence of pests and diseases that affects cocoa farms.

7. Cocoa Management System (CMS)

Popularly known as Cocoa farmer census is a program under which all cocoa farmers are enumerated with their data captured including useful sociodemographic characteristics. Their farm sizes and other farm characteristics are also captured. This data will eventually be the platform upon which essential services like cocoa farmers pension scheme would be rolled out for farmers by COCOBOD

8. Irrigation

Due to climate change and its devastating effects COCOBOD has embarked on an aggressive irrigation programme to bring irrigation to the farm gate of the ordinary cocoa farmer as a climate change mitigating and coping strategy. To this end a lot of boreholes have been sunk and solar powered to irrigate some clusters of farms in the various district. Plans are far advanced to dam some big rivers in the cocoa districts for irrigation purposes.

2.9.3 Wildlife Conservation and Protection

The Wildlife Division of the Forestry Commission has a mission to ensure conservation, sustainable management and development of Ghana's wildlife resources for socio-economic benefit to all segments of society. Specially, the Division has adopted the following strategies:

- Protect and develop Ghana's permanent estate of wildlife-Protected Areas (PAs).
- Promote management and development of wildlife outside wildlife-Protected Areas.
- Develop Eco- tourism potentials of the PAs.
- Promote the development of wildlife - based enterprises.
- Develop linkages with other agencies and NGOs whose activities impact wildlife.
- Assist local communities to develop and manage own reserves
- Foster closer collaboration with communities closer to PAs through the promotion of community resource management areas (CREMA).
- Promote public awareness and education on wildlife management issues.

In line with the above, in the Atewa HIA, the Wildlife Division at the district level embarks on a number of activities including community education and sensitization, as well as patrolling and monitoring of forest reserves for biodiversity protection and conservation.

3.0 INSTITUTIONAL SETUP FOR IMPLEMENTING GCFRP ACTIVITIES

NRS has put in place an inclusive and participatory approach for the implementation of all activities. In a broader sense, the main institutions implementing the REDD+ and have interest in environmental and social management include:

- Ministry of Lands and Natural Resources (MLNR);
- Ministry of Food and Agriculture (MOFA);
- Ministry of Environment, Science, Technology and Innovation (MESTI)
- Forestry Commission (FC): - National REDD+ Secretariat (NRS)/Climate Change Directorate (CCD), Forestry Services Division (FSD), Resource Management Support Centre (RMSC);
- Ghana Cocoa Board;
- Metropolitan, Municipal and District Assemblies (MMDAs);
- Environmental Protection Agency (EPA);
- World Bank and other donors.
- Traditional Authorities
- Cocoa Research Institute of Ghana (CRIG)
- Participating Civil Society Organizations (CSOs) / Non-Governmental Organizations (NGOs)
- Participating Private Companies and their representatives in-country
- Community members and farmer groups

Table 7: Organizations/Institutions and Partner Agencies involved in the GCFRP implementation

NAME OF ORGANIZATION / PARTNERS	CORE CAPACITY AND ROLE
Forestry Commission of Ghana	Forestry Commission (FC) is the government institution responsible for the sustainable management of Ghana's forest and wildlife resources. Forestry Commission and COCOBOD set the national framework and developed an enabling cocoa policy and strategy around environmental sustainability for this project. The Climate Change Directorate of the FC was established in 2007 with a mandate to manage forestry-sector initiatives related to climate change adaptation and mitigation, including REDD+. It hosts the National REDD+

NAME OF ORGANIZATION / PARTNERS	CORE CAPACITY AND ROLE
	Secretariat, which is responsible for coordinating Ghana's REDD+ process. The sector ministry for the FC is the Ministry of Lands and Natural Resources (MLNR). In partnership with Ghana's Cocoa Board, the FC is responsible for this programme, including its design, management, and implementation.
Ministry of Lands and Natural Resources (MLNR)	MLNR is the sector Ministry to which the Forestry Commission reports. It is also responsible for coordinating and implementing Ghana's Forest Investment Programme (FIP). The Minister of the MLNR chairs the National REDD+ Working Group (NRWG) which is an intersectoral body that provide oversight, Coordination and Management of the GCFRP.
Ghana Cocoa Board (COCOBOD)	Ghana Cocoa Board (COCOBOD) is a co-proponent of the GCFRP with the Forestry Commission and together they co-lead the programme implementation. COCOBOD is the government institution responsible for the regulation and management of the cocoa sector. COCOBOD serve as co-chair, with the Forestry Commission on the GCFRP Joint Coordination Committee to provide strategic coordination and management for implementation of the programme
Ministry of Environment, Science and Technology (MESTI)	MESTI is the sector ministry with responsibility to formulate, develop, implement, monitor and evaluate environmental policies in Ghana, including the National Climate Change Policy. MESTI has a seat on the NRWG and is a key partner on all aspects of REDD+.
Ministry of Food and Agriculture (MOFA)	MOFA is represented on National REDD+ Working Group (NRWG) and is responsible for ensuring that extension services and interventions related to food and cash crops including oil palm and citrus align with the goals of Ghana's Cocoa Forest REDD+ Programme.
Environmental Protection Agency (EPA)	EPA is the National Focal Point for United Nations Convention on Climate Change (UNFCCC) and is responsible for all National Communication to the UNFCCC. EPA ensures that the programme's accounting is reflected in the national accounting. It also hosts Ghana's Climate Change Data Hub, which supports elements of data management and registry.
Forestry Research Institute of Ghana (FORIG)	FORIG is a research institute under the Council for Scientific and Industrial Research (CSIR) conducting research on forests and forest products for social, economic and environmental benefits of society. FORIG advises the Joint

NAME OF ORGANIZATION / PARTNERS	CORE CAPACITY AND ROLE
	Coordinating Committee (JCC) and provide technical guidance on the implementation of field activities and development of appropriate systems for the success of the programme.
Cocoa Research Institute of Ghana (CRIG)	CRIG is a subsidiary of COCOBOD established as a center of excellence for developing sustainable, cost effective, socially and environmentally acceptable technologies for the cocoa industry. CRIG is responsible for all cocoa research that provides information and advice on matters relating to the production of cocoa and other mandate crops
National House of Chiefs	The National House of Chiefs is a body of elected representatives from Ghana's Regional Houses of Chiefs that is recognized by the Constitution. It is charged to advice on issues related to culture and chieftaincy and works towards the codification of customary law. The national house of chiefs works with the programme to liaise with Paramount chiefs that have jurisdiction over landscapes within the programme area. They play critical role in the implementation of the Grievance Redress Mechanism and will also provide guidance on issues related to benefit sharing.
World Cocoa Foundation (WCF)	WCF promotes a sustainable cocoa economy through economic, social and environmental development in cocoa-growing communities. It is organizing an industry commitment to end deforestation and forest degradation. The initiative will develop in consultation with the relevant cocoa producing country governments, farmers and farmer organizations, civil society organizations, development partners, and other stakeholders, measures to end deforestation and forest degradation, while improving the livelihoods of smallholder farmers working in the cocoa supply chain.
Produce Buying Company (PBC)	PBC is one of the biggest licensed cocoa buying companies (LBCs) in Ghana, and has the greatest geographical presence, being present in every village/society.
A Rocha	They are a committed environmental NGO providing practical conservation interventions aimed at contributing to the sustainable management of important ecological habitats and initiating programmes aimed at facilitating target community's ability to adapt to current trends in climate change and the impacts of a changing natural environmental. Their ultimate objective in all that

NAME OF ORGANIZATION / PARTNERS	CORE CAPACITY AND ROLE
	we do is to inspire and empower people to care for nature, whiles promoting and supporting sustainable natural resource management.
Solidaridad	Solidaridad is an international civil society organization with over 50 years of experience in developing solutions to make communities more resilient. They promote sustainable production, inclusivity and agricultural service provision for small and medium enterprises. They also work in market integration for smallholders, food security and nutrition, climate-responsiveness, and community development, in collaboration with farmers, miners, workers and local communities.

3.1 Coordination of Interventions/Activities at the HIA Level

While NRS directs and coordinates implementation, the actual implementation of priority activities in each HIA rely on a consortium of stakeholders (HIA Implementation Consortium Partners) who live, work, or have investments within the landscape, and have an interest in the area. The HIA landscape is managed by an HIA Governance Body made up of local land-users, landowners and traditional authorities who organize themselves into a government recognized Natural Resource Management (NRM) structure, like that of the CREMA (i.e., modified CREMA), which accords them the right to manage their natural resources for their benefit.

The Consortium and the HIA Governance Body put in place how best to coordinate all activities related to the programme in the HIA. The NRS and the HIA Consortium carry out a participatory process to build the HIA governance and implementation structure at each location. Following successful negotiation of HIA initiation, the programme supports the requisite steps to establish management boards, prepare HIA constitutions, and hold regular HIA governance meetings. Key decisions of the HIA Governance Board are to determine how best to make the transition to a climate-smart, no deforestation, sustainable cocoa production system in line with the development of a standard. Key activities involve landscape planning, zoning land use practices, approving CSC practices to be adopted by farmers in the HIA, financial planning and management structures, and reaching agreements with the HIA CSC Consortium. Appropriate levels of

communications with all stakeholders are achieved through durbars, local FM radio announcements and other media.

3.2 Integration of Stakeholders in the Implementation of Interventions/Activities through the HIA Governance Structure

The HIA is designed to work in collaboration with a formal Consortium of key stakeholders, including private sector cocoa companies, NGOs and government agencies, through an established HIA Implementation Committee with representatives from both the community based HIA Management Board and the Consortium on this committee. The landscape is divided into a series of sub-landscape HIAs (Sub-HIAs) which together cover the area of the whole HIA. Each sub-HIA will provide localized leadership and governance within defined boundaries which reflect divisional or sub-chiefs' jurisdictions and/or appropriate environmental/geographic boundaries. Key aspects of creating or supporting Sub-HIAs are determining the boundaries, the zoning of conservation areas and development areas, as well as the creation of sub-HIA and HIA byelaws and then a Management Plan. At the landscape level, all of the Sub-HIAs have representatives on an umbrella body—the HIA Landscape Management Board. This Board has a formal relationship with the Consortium and is advised by the highest level of Patrons from the Traditional Council.

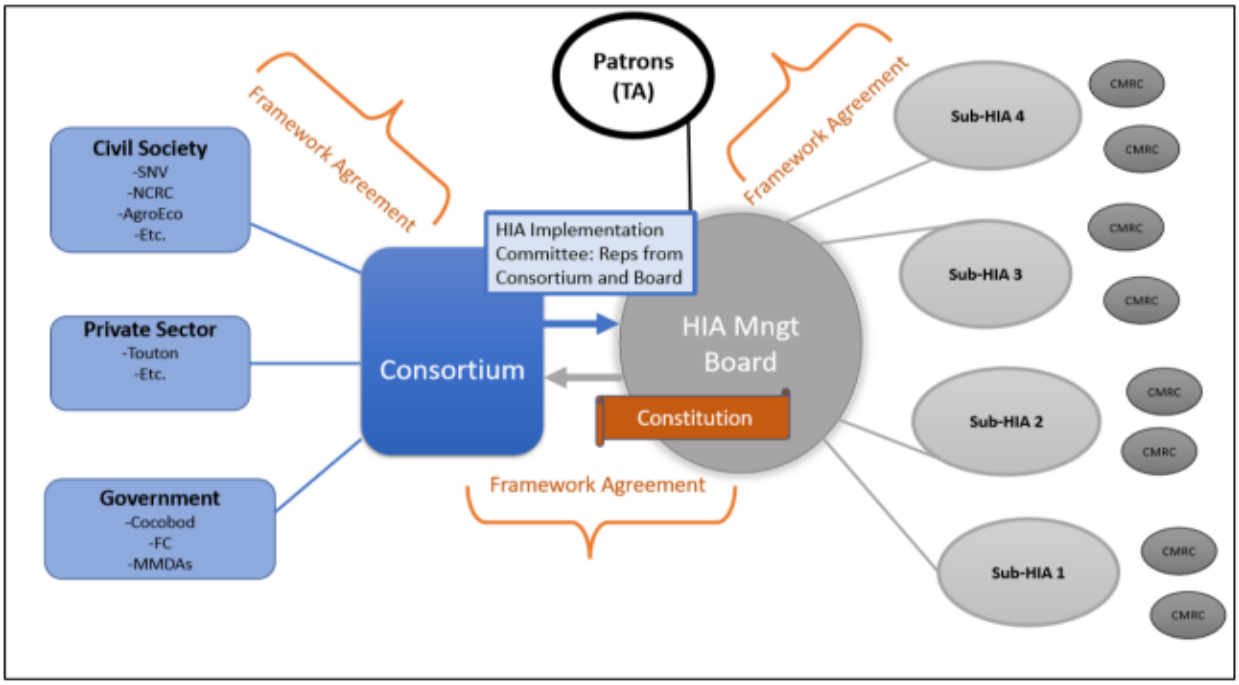

Figure 3: Collaboration within the HIA

The organization of communities for active REDD+ implementation is done at various levels (tiers) to ensure openness, inclusiveness, as well as participatory and transparent process. At the various levels (Community, CREMA/Zone, Sub-HIA and HIA), community-led leadership (Functional Units) is constituted to provide leadership. The Functional Units are the Community Resources Management Committees that provide leadership at the community level, CREMA Executive Committee that provide leadership at the CREMA level, Sub-HIA Executive Committee that provide leadership at the Sub-HIA level and HMB that provide overarching leadership at the HIA level.

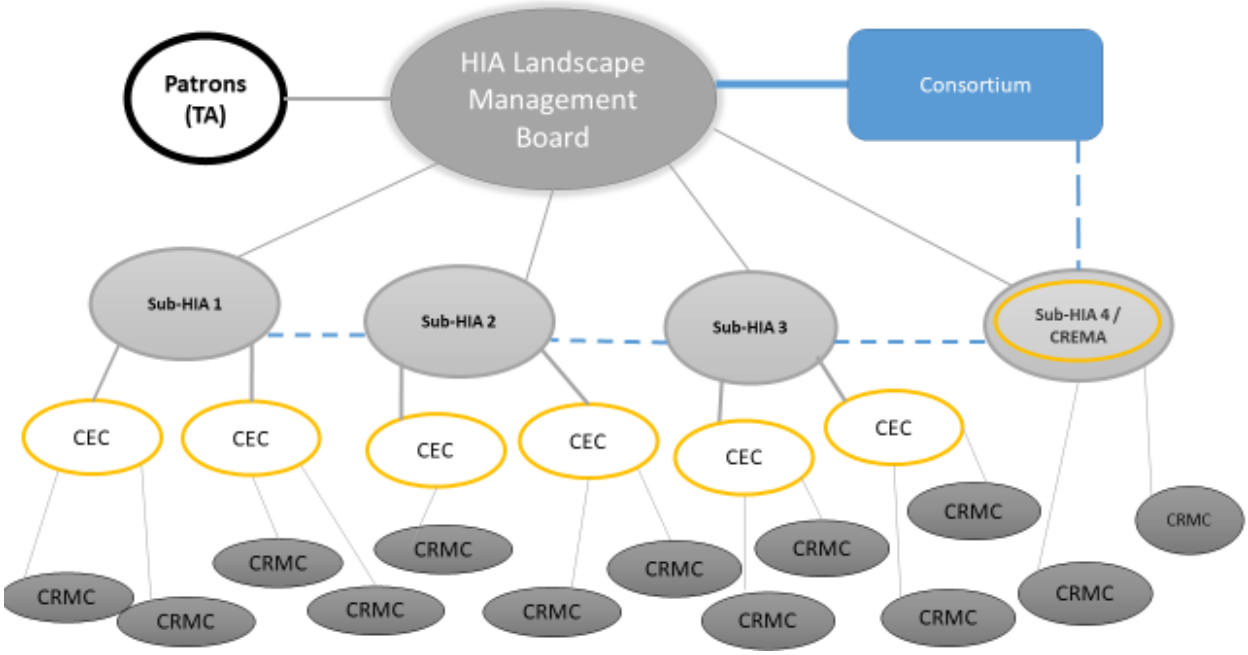

Figure 4: Tiers of the governance structure within the HIA

3.3 HIA functional units

3.3.1 Community Resources Management Committee (CRMC)

The Community Resources Management Committee (CRMC) is the basic unit of the HIA governance structure yet most crucial in that the strength of the entire structure depends on the quality of persons forming the CRMC who direct and mobilise farmers for action at the community level. Within each constituent community of the HIA, the CRMC has a representation of all identifiable interest groups. This structure is built on existing community governance and decision-making structures and is tasked with the implementation and/or enforcement of CREMA, SUB HIA and HIA management decision within the respective communities.

3.3.2 Community Resources Management Area (CREMA)

Community Resources Management Area (CREMA) or Zone is the next phase of the HIA governance structure designed to achieve a landscape-wide governance structure. CREMA is defined as a geographically defined area that includes one or more communities that have agreed to manage natural resource in a sustainable manner guided by constitution and enacted by-laws. In the CREMA/Zone formation, several CRMC communities are clustered together based on commonality of traditional boundaries, proximity, cultural or traditional ties. The term zone is conveniently used to denote the cluttered area/group that is worked on to achieve a CREMA status. This implies that areas designated as zones do not have bylaws but rather have rules and regulations to guide their operations owing to the relatively longer time and rigorous process involved in obtaining bylaws. At the Zonal level, elections are conducted to elect Zonal/CREMA Executives, known as the CREMA Executives, that have oversight responsibility over the CRMCs.

3.3.3 Sub-Hotspot Intervention Area (SUB-HIA)

In the HIA governance structure, the Sub-HIA is the third tier that encapsulates the CREMA and the adjoining Non-CREMA Area (NCA). In other words, several CREMAs and NCA subsume under a given Sub-HIA. The tier covers an expanse area same as, or normally larger than a CREMA area. It is managed by a Sub-HIA Executive Committee (SHEC) with equitable representation of all its constituent groupings and is responsible for decisions of collective interest. Similar to the formation of the CREMA, several zones are grouped together to form the Sub-HIAs based on political-administrative district boundaries, sizes of their communities and their population. Each sub-HIA has a seven-member SHEC who are elected from the respective CREMAs and NCAs constituting that particular sub-HIA. Each sub-HIA is entitled to 1-2 patrons who are drawn from the traditional authorities or influential community members (Sub-Chiefs). They serve as advisers to the sub-HIA and are the final arbiters in traditional matters arising from activities within the sub-HIA. Patrons also act in making peace and unity in order to advance development within the sub-HIA.

3.3.4 Hotspot Intervention Area Management Board (HMB)

The HIA encapsulates all the designated Sub-HIAs and therefore connects all HIA communities as though a single harmonized landscape-wide governance and/or jurisdictional entity. Therefore, HMB is the apex decision-making body structure of the HIA governance structure and

is responsible for guiding and directing all HIA management decisions toward a common vision for the collective good of Sub-HIAs, Zones/CREMAs, CRMC and communities. The HMB was set up by a conscious consideration of creating space for a balanced representation of individuals from the Sub-HIA level to be well represented on the HMB. The selection of HMB representatives is subjected to a robust, competitive electoral process involving nominations, vetting, manifesto reading, and voting by a secret ballot.

The HMB, together with the HIA functional Units including the CRMCs, CECs, SHECs, are expected to play important roles at the landscape level including but not limited to the following:

- Commits to implement 'CREMA-type' landscape planning and management processes
- Commits to building local governance institutions to manage the cocoa landscape
- Commits to supporting farmers in the adoption of climate-smart cocoa practices, with attention to gender and youth
- Commits to participate in the identification of cocoa farms in the landscape including on-reserve
- Commits to participate in GCFRP activities within the landscape
- To educate communities on the importance of conservation of the natural and cultural resources and to stem further habitat degradation.

4.0 STAKEHOLDER ANALYSIS

4.1 Stakeholder Identification and Mapping

Stakeholder mapping provides adequate understanding of the position and relevance of each stakeholder when evaluated by the same key criteria and compared to each other and also helps in visualizing the often-complex interplay of issues and relationship. Key stakeholders identified included the traditional authorities, local governance institutions, forestry offices, agriculture development departments, cocoa companies, licensed buying companies (LBCs), farmer groups, civil society organizations (CSOs) and related sectors. These were categorized into five (5) major groups: (i) public sector agencies, (ii) private sector, (iii) traditional authority, (iv) Civil Society Organizations/Non-governmental Organizations and (v) community-based actors such as farmer associations and agro-commodity producers. A stakeholder mapping analysis was done using Mendelow's Stakeholder Mapping Matrix (1991), otherwise called the power-interest matrix to identify stakeholders conflicting elements and determine their potential role, power, and influence in the landscape as far as the implementation of GCFRP activities in the HIA are concerned.

Table 8: Stakeholder Matrix Model Explained with Implication on Programme Implementation

No.	Category of Matrix	Explanation and Implication	Stakeholders in the HIA
1.	Low Interest and Low Power (LL) –Minimal Effort	• They are more likely to accept what they are told and follow instructions. • Can be largely ignored when considering project planning. • Ethically, it is considered that ignoring them may awaken their interest. • Monitor (Minimum Effort)	• Lands Commission • Office of the Administrator of Stool lands (OASL)
2.	High Interest and Low Power (HL)	• Should be duly considered during implementation phase. • Keep informed and not underestimated. • Can lobby others to join forces to exert pressure	• Municipal and District Assemblies (MDAs) • Cocoa Forest Initiative Secretariat • Civil Society Organizations • Donor Partners
3.	Low Interest and High	• Keep satisfied and remains dormant.	• Traditional Authority

	Power (LH) – Keep Satisfied	• If they become more interested, they can easily become key players.	
4.	High Interest and High Power (HH) – Key Players/Participation	• Have high influence on programme implementation. • Could inhibit the achievement of project objectives. • Manage closely	• Forestry Commission • National REDD+ Secretariat • Ghana Cocoa Board • Ministry of Lands and Natural Resources • Ministry of Food and Agriculture • Private sector companies • Farmers and Farm-based Organization

The tool identified the National REDD+ Secretariat of the Forestry Commission, COCOBOD, the private sector (cocoa companies), farmers and farm based organizations as the most important stakeholders as far as the implementation of the GCFRP is concerned. The tool also identified the traditional authority as stakeholder with a lot of influence that must be engaged always. Important stakeholder such as the local government, MoFA, CSO, CBOs, development agencies, Farmer-based organizations, are potential key implementation partners and these must be engaged actively for the successful implementation of the programme.

4.2 Public Consultations

Public consultations are placed centrally to safeguards implementation of activities/interventions at both national and sub-national levels. Public consultations were organised through meetings, community engagements, trainings and workshops. A series of information sharing and consultative programmes were undertaken to enhance awareness of the program and ensure that there is shared understanding of the critical roles of key stakeholders. Stakeholders consulted included Cocoa Private Sector actors', Multi-stakeholder Policy Actors. Legislators, MMDA's, NRWG, Traditional Authorities. A summary of public consultations that took place are detailed below:

Box 1: Public Consultation 1

Roundtable discussions on draft BSP for the GCFRP

As part of finalizing and validating the BSP for the GCFRP, roundtable discussions on the draft BSP were held on Friday 19th January, 2018 at the FC Auditorium, and Friday, 2nd March 2018 at the same venue. This round of discussions resulted in the finalization of the draft BSP towards National Validation.

Box 2: Public Consultation 2

Engagement and Sensitization of Safeguards Focal Persons

Between the periods 7th, 8th & 22nd February 2018, Safeguards Focal Persons (SFP) were sensitized and trained on key global, donor and national level safeguards requirements for REDD+ implementation. The SFPs were drawn from the Regional, District and Park offices of FSD and WD. 71 SFPs were convened and trained on the requisite safeguards requirements for REDD+ implementation at Anita Hotel, Kumasi. Opinions and recommendations were also solicited from participants with regards to how best to implement REDD+ activities.

Box 3: Public Consultation 3

Multi-stakeholder meeting on the implementation of the GCFRP

Subsequent to the signing of the joint framework for action on cocoa and forest initiative between the Government of Ghana and Private Sector actors in the cocoa industry on 17th November 2017 in Bonn (Germany), a multi-stakeholder meeting was held on the implementation of the GCFRP on Wednesday, 28th February 2018 at the Forestry Commission Board Room. The discussions centred on private sector initiatives within the Cocoa Forest Mosaic Landscape under the GCFRP. Stakeholders were requested to deliver a five (5) minute presentation on their initiatives in the landscape highlighting the location, objectives, key actions and the expected output.

Box 4: Public Consultation 4

Engagement of community members and other stakeholders

NRS engaged community members and other stakeholders in 10 districts within the 6 HIAs to sensitize them on REDD+ Safeguards in collaboration with CSOs within the landscapes. The opinions and recommendations of these stakeholders were also solicited. These engagements occurred in 10 forest districts across all the six Hotpot Intervention Areas

(HIAs) Identified for the GCFRP. The districts are Sefwi Wiawso, Cape Coast (Kakum National Park Area), Kade, Bechem, Juaso, Goaso, Nkawie, Ho, Begoro and Juaboso. Participants were 850 consisting of 580 males (about 70%) and 270 females (representing about 30%). These landscape activities were done in active collaboration with some Civil Society Organizations in Ghana namely Civic Response, International Union for Conservation of Nature (IUCN) and HATOF Foundation.

Box 5: Public Consultation 5

Engagement on SIS and FGRM for REDD+ regional and district safeguards focal persons

The Climate Change Department (CCD) organized a two-day training workshop on the functions of Ghana's REDD+ SIS and FGRM at the Forestry Commission Training Centre (FCTC) in Kumasi from 19th - 20th June, 2018 for regional and district safeguards focal persons within the High Forest Zone of the GCFRP. The selected 71 Safeguards Focal Persons (SFPs) were trained on the functions of Ghana's REDD+ SIS and FGRM. Feedback and recommendations were solicited from the SFPs on where and how to improve the SIS and FGRM.

Box 6: Public Consultation 6

Engagement on Safeguards and monitoring exercise

To ensure a successful REDD+ implementation, there was the need to monitor and evaluate activities undertaken during the readiness phase and seek suggestions to effectively implement the REDD+ programme. A field team visited seven Forest/Wildlife districts which were; Kakum, Begoro, Kade, Sefwi-Wiawso, Juabeso-Bia, Nkawie, and Juaso. The objective of the field visit was to get feedback from stakeholders on the effectiveness of the safeguards capacity building workshop held in 2018 to achieve effective REDD+ safeguards implementation. Another objective was to go through pre-screening exercise of sub-projects under the GCFRP with Safeguards Focal Persons (SFPs) to identify potential environmental impact. The field visit commenced on 4th of March and ended on 15th March, 2019.

Box 7: Public Consultation 7

Consultative workshops to inform on tree tenure and benefit sharing plan for REDD+

7 consultative workshops conducted in Kakum, Begoro, Kade, Sefwi-Wiawso, Juaboso-Bia, Nkawie and Juaso.

Box 8: Public Consultation 8

REDD+ Awareness Creation and Sensitization of Stakeholders

Over 15 Awareness Creation and Sensitization events were undertaken including meetings with Executive Management Team (EMT), GCFRP Launch, Safeguards workshops, TV and Radio shows etc.

Box 9: Public Consultation 9

National stakeholder engagement meetings for the GCFRP

A two days national GCFRP stakeholders meeting was held on the premises of the Forestry Commission from 2nd – 3rd November, 2020. This meeting was specifically to sensitize stakeholders on the agreed percentage and commensurate benefits due them according to the BSP, explain the modalities of receiving payments, Upfront and Actual, update stakeholders on the rationale for the UAP and the utilization thereof, and discuss the GCFRP implementation planning and progress in context of meeting first monitoring report requirements.

Table 9: Some issues/comments raised during consultations

Issue/Comment	Response
Considering the WB safeguard policy on natural habitat, a participant queried if government should implement its one village one dam policy	Funds for that initiative are not secured from the bank. Therefore, the banks policy on safeguards cannot be applied and more especially considering the time required for the start of the project. However, the impact of the REDD+ project on that government initiative would come out in the EIA and addressed.
A participant noted that, SESA mainly applies to bigger or programs /project of large scale and wanted to find out why it	SESA is strategic level of assessment but in categorization, the emphasis is on project actions which more specific and therefore could be categorize as such.

is categories under A or B; thus, project with minimal impact.	The categorization is for project whereas SESA mainly target programmes especially at the national or wider landscape level. Categorization looks more into detail within a landscape.
Considering how safeguards policies compensates displaced person, a participant wanted to find out how such persons continuously get fair share of profits (from their earlier businesses) especially when they occupationally displaced?	This can be achieved through engagement and constant monitoring of the actions of such displaced persons. For instances, if a farmer is displaced, there is the need to ensure he/she secures land with same fertility level as his previous for him/her to cope with life. It was further reiterated that, the idea of safeguards for displaced persons rest on the assumption that, the person should not be worse off. Therefore, the need for documentation on support offered to such persons for constant monitoring of their wellbeing.
Should ungazetted forests dwellers be compensated and resettled, knowing that their occupancy is illegal?	The bank policy stipulates that, such people (legal or illegal) should be supported and resettled under the programme intervention. The other option is for the government of Ghana to address such illegal issues before the implementation of the REDD+ programme or else, have to treat them as legal settlers and compensate them if displaced.
How are we addressing cocoa expansion into forest noting that it enhances productivity?	One core aspect of the project is to minimize or eliminate cocoa expansion into forest. With expansion into the landscape i.e. off reserve, farmers in areas under REDD will be trained to adopt improved practices for efficient productivity rather than mere expansion.
Are safeguards backed by law(s)?	As far as Ghana is concerned, there are regulations that back safeguards. In the same vein, the WB and the AfDB safeguard policies serve as laws for the banks as well as other corporate institutions.
Considering the role of FC as the manager of forest reserves in the country, a participant queried if FC will not lose grip of its mandate of conservation and protection of forest reserves if illegally	Per the banks safeguard policies, it is required that such destruction is catered or paid for; given it a more human face. Such costs are mostly bourn by the government/state in a bid to secure much bigger

established farmers are compensated and resettled	funding from the bank (WB/AfDB) to fund its intended projects.
What will be implication of Ghana's adoption and use of these multiple safeguards standards?	Ghana as sovereign country have its own procedures on safeguards. What other international safeguard policies and standards seek to do is to inform us in consolidating our local safeguard standards/rules. He was however quick to add that, the fact that the country depends on the support of these institutions for most of its programmes, it should not wholeheartedly swallow safeguard standards required by these development partners but rather critically assess it and adopt the more practically efficient ones. It was further added that, should Ghana simply adopt safeguard standards of development partners, the country risks adopting or complying with multiple safeguard standards which has the potential of further compounding the challenge of poor collaboration and coordination of sectors, laws and policies.
What should be done if challenges seem impossible to address e.g. community resettlement?	It is always important to identify needs and fears of such people and address their concerns In this regard, dialogue and constant engagements are key.
When is the EA1 and EA2 used?	Theoretically, the EA1 is supposed to be filled before the project is initiated, however they two (EA1&2) could be completed concurrently. The law mandates that, one should be charged for undertaken an activity without the EA1 (schedule 1 projects). However, small projects will require the completion of only EA1 to get permit. EA2 provides more details of the project i.e. site plan, scope of the project, business registration, land titles, tax returns, etc. (schedule 2 project). This is further supported by scoping report which details out the infrastructure, activities, baseline (air quality, water quality, soil text etc.).

Should monitoring always be done at the end of the project?	Monitoring should be an on-going process throughout the entire project life with intermittent and final reporting documenting progress on activities towards achieving set targets
Which stakeholder group(s) can have access to and use monitoring results?	When designing and implementing a monitoring protocol, effort must be taken to ensure the result of the monitoring is understandable and usable to stakeholders of concern ranging from the donor, government, policy makers, project beneficiaries among others. In achieving this, it is always important to involve stakeholders form the on-set of the M&E process such that they contribute and appreciate the results.
Can we plant cocoa in the forest (with trees) because government is encouraging us to plant trees in our own farms?	We have forest lands and farm lands. There are other land use types. Forest are also land use and therefore should be respected as such. It requires legal amendments to change the designated land use type
At what stage do the FC involve communities in allocation of permits as there are concerns of non-involvement of communities/locals in such dealings?	the allocation of permits begins from the field and it required farmers or communities consent before a concession can be allocated.
What the difference between a concession on farmland and on a forest land?	There is no longer concessions in Ghana. What exist is timber utilization contract for a maximum for five years, subject to two years renewal on forest. In off-reserves, salvage permits are issued
Who has custody of documents on tree plantation	In a Private-Public Partnership (PPP) agreement on plantation, the documentation goes to stool land owner
Where do communities collect their benefit (money) from timber extracted in Modified Taungya System (MTS) areas?	From Forestry
Farmers will be involved in the programme, is the REDD+ for the Fanteakwa district alone?	REDD+ is a national programme but the initiatives are geographic specific i.e. on cocoa in the high forest zone, charcoal in the north and the transitions zone, etc.
What are being put in place to ensure members of the FGRM team who are	Measures will be put in place to ensure that, in case where FGRM team member is a party to a conflict, such persons will be rescued as a team member and treated

sometimes parties to conflicts are managed?	solely as a party to conflict. This will create an equal opportunity for conflicting parties to resolve their issues without favor and as such resolutions reached will be fair and binding on conflicting parties.
Will REDD+ build on or ignore existing forest resource governance and management structures?	REDD+ seeks to strengthen and make use existing governance platforms such as the CREMAs, TAs and others to achieve sustainable forest management. This will ensure inclusiveness in the REDD+ process to effectively and efficiently deliver on its intent; thus sustainable forest management.
How will the secretariat ensure we (community level stakeholders) effectively contribute and benefit from the REDD+ programme?	Capacity development for stakeholder's ad actors at all level is core to the implementation of the programme. Capacity gaps will be identified and filled. Requisite structures and resources (technical and financial) will be made available for stakeholders to fully take advantage off and realise the full potential of the programme.
Who own forest carbon stocks?	Trees occurring naturally belongs to the state but trees planted by individuals in their farms or nurtured belongs to them. However, benefit sharing arrangements exist for timber extraction in the country. Further, the process of determining the forest carbon stocks and benefit sharing arrangements is still on-going
If I have my own property, what screening or EIA assessment do I have to do?	There is the need to register your undertaking with the requisite state institution and seek advice form EPA on the required EIA to be carried out

5.0 INSTITUTIONAL SETUP AND RESPONSIBILITY FOR ENVIRONMENTAL AND SOCIAL SAFEGUARDS IMPLEMENTATION AND REPORTING

5.1 Implementing institutions

NRS has put in place a robust institutional arrangement for the implementation, monitoring and reporting of safeguards in close collaboration with EPA, the National Safeguards Working Group as well as partner organizations supporting the implementation of ER activities.

At the national level, Environment and Social Safeguards staff are recruited as part of the national level Project Management Unit (PMU). The PMU Safeguard Specialists are responsible for operationalizing all safeguards aspects of the GCFRP and overseeing and organizing all activities related to safeguards trainings, monitoring, and reporting within the program area. This team receives all of the safeguards information and data from the regional/district-level Safeguards Focal Points in order to review and further analyse the data as required, provide final verification, and where questions or gaps arise, work with the Regional/district level focal points to make corrections and improvements.

The national level PMU safeguards specialists play a key role in ensuring safeguards compliance and are further responsible for

- Coordinating environmental and social safeguards across the HIAs;
- Providing leadership across the regional and district levels for the implementation of safeguards;
- Providing guidance and project level info and tools on safeguards for all stakeholders;
- Managing the environmental and social safeguard experts at ER program areas;
- Coordinating all safeguard activities with donors, implementing agencies and other potential investors; and
- Overseeing all environmental and social safeguard training and capacity building.

At the regional and districts levels, regional/district level Environmental and Social Safeguards Focal Points are in place. They:

- work closely with the national level NRS Environmental and Social Safeguards (ESS) Focal Points to ensure that all environmental and social safeguards issues are incorporated into Bid and specifications documents for all sub project types;

- ensure that safeguards issues are included as part of the training at District level and contractors invited to participate;
- draft safeguards report based on collated documents and reports from district activities as part of usual regional reporting on the project;
- are the first point of contact for the district in case of any challenging issues on project-related safeguards - land, environmental, safety and health and draw the FC ESS Focal Point's attention in case of lack of resolution;
- collaborate with relevant authorities (chiefs and elders) and other community members and facilitate the implementation of subprojects and implementation of any other safeguards related activity; and
- perform any other related activities that may be assigned by the NRS ESS Focal Point to whom s/he will report.

Below is the diagram illustrating safeguards implementation:

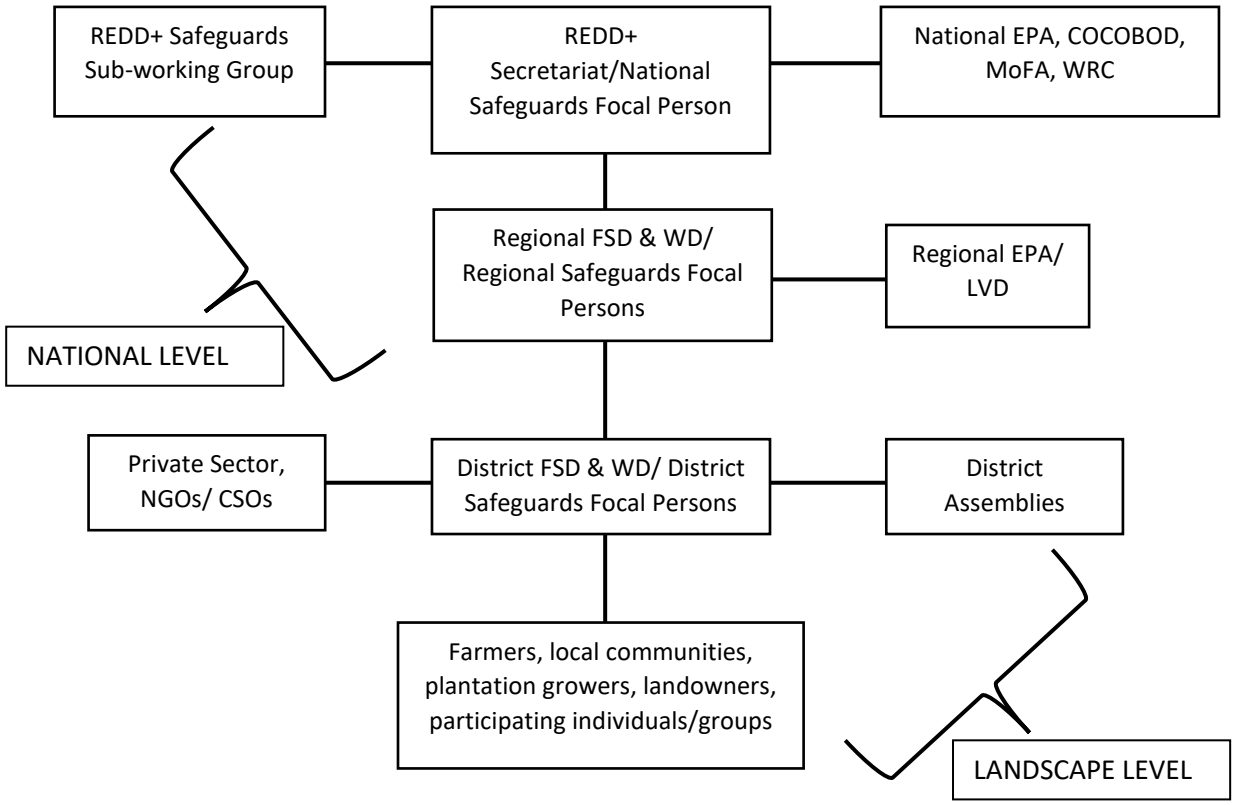

Figure 5: This figure illustratess the levels of safeguards implementation from national to landscape level

5.2 Collaborating Institutions

NRS supervises on-ground safeguards implementation including screening and monitoring of interventions/activities captured under the Ghana Cocoa Forest REDD+ Programme. This exercise is usually done collaboratively between NRS and other key partners such as the Environmental Protection Agency (EPA) and the HIA Management Board (HMB). The EPA being the statutory regulator of the environment provides technical support to complement the efforts of the NRS. The EPA undertakes training and sensitization programmes focusing on safe handling of agro-chemicals, safety issues, and protection of natural resources including forest, biodiversity and water. The EPA collaborates with key institutions like the District Assemblies and the Departments of Agriculture (under the Ministry of Food and Agriculture) in providing these services.

Also, the Ghana Cocoa Board being one of the proponents of GCFRP undertakes measures to safeguard adherence through Climate Smart Cocoa, training on safe use of agro-chemicals, compost application, training on approved/recommended agrochemicals, and on-farm biodiversity conservation. The private sector cocoa companies similarly undertake such activities as part of their commitment to safeguards implementation. The Civil Society Organizations (NGOs) /Non-Governmental Organization (NGOs), on the other hand, promote the uptake of safeguards implementation among farmers at the community level. The CSOs/NGOs regularly interface with farmers/ farmer groups on a number of capacity building activities on safe compliance. All these are done in collaboration with the Regional/District level Safeguards Focal Points.

These important contributions from the GCFRP partners result to many positive outputs including yield improvement leading to hunger and poverty alleviation, biodiversity improvement and forest protection, to mention a few.

5.3 Safeguards Information System (SIS)

As part of requirements from the UNFCCC for receiving results-based payment under REDD+, countries are expected to provide information on how they are addressing and respecting safeguards. In addition, the UNFCCC requirements also require that information on the implementation of the safeguards associated with REDD+ activities at sub-national and site levels is collected and provided as evidence that the safeguards have been addressed and respected in

practice. This would include demonstrating that safeguards measures, processes / procedures have been applied as well as monitoring the impacts of REDD+.

Although there are no official guidelines, Parties to the UNFCCC have agreed on some broad guidance on the characteristics of a SIS. It should:

- provide transparent and consistent information that is accessible by all relevant stakeholders and updated on a regular basis;
- be transparent and flexible to allow for improvements over time;
- provide information on how all the safeguards referred to in Appendix I to decision 1/CP.16 are being addressed and respected;
- be country-driven and implemented at the national level; and
- build upon existing systems, as appropriate.

Reliable safeguards information is important not only for achieving REDD+ in a sustainable manner but can serve possible broader sustainable development and other national policy, goals (as well as other international reporting obligations). For Ghana, which has multiple reporting commitments linked to relevant agencies/initiatives (e.g., Cancun, FCPF Carbon Fund, Green Climate Fund, national and other safeguards) an SIS that is able to provide information to all of them, is a cost-effective approach. A comprehensive review of policies/laws/ regulations has been undertaken as part of the development of the SIS (safeguards information needs of the SIS), specific indicators and criteria were developed to serve as a basis for implementing and monitoring safeguards (Policies, Criteria and Indicators (PCIs)).

In the case of the Cancun safeguards, Ghana has determined 'what type' of information is needed to demonstrate whether they are being addressed and respected. This has been done in accordance with Ghana's clarification of the Cancun safeguards. It is worth noting that the clarification specifies how the general principles outlined in the Cancun safeguards translate into specific principles and objectives that are to be followed and promoted in the context of the implementation of REDD+ interventions in Ghana, and which are anchored in the country's policies, laws and regulations (PLRs). The clarification, interpretation or description was an essential step in the design of an effective safeguard governance framework for REDD+ for two reasons:

- It is one of the foundations of the Safeguard Information System (SIS) as it is key to determining the types of information that are to be gathered by the SIS; and
- It is central to the preparation of the summary of information, as it helps to determine the information that should be provided to the UNFCCC to demonstrate how the safeguards are being addressed and respected.

Ghana's approach to the development of safeguards Principles, Criteria and Indicators (PCIs) within the country's context involved the identification of key elements from existing mandatory and voluntary safeguards standards/frameworks such as the UNFCCC (Cancun) Safeguards and World Bank Operational Policies, that relate to the rights of local communities; inclusive participation of all relevant stakeholders; equitable sharing of benefits and risks; gender mainstreaming; Free, Prior and Informed Consent (FPIC); enhancement of biological diversity and ecosystem services, and other key issues that affect social and environmental performance of REDD+ programmes and/or projects.

An initial identification/drafting of PCIs was carried out by a technical team through a step-wise approach, after which the draft PCIs were subjected to stakeholder consultations at the local and national levels for feedback and finalization. The safeguard information needs of the SIS is outlined in the framework document of the SIS.

In line with this, a web-based REDD+ Safeguards Information System (SIS) has been developed to provide transparent and consistent information that is accessible by all relevant stakeholders. The web-based SIS platform provides information on how REDD+ Social and Environmental safeguards are being addressed and respected throughout implementation of the REDD+ programme. The web platform was developed after a series of engagements by stakeholders. The web platform was developed by the ICT department of FC with financial support from SNV Netherlands Development Organization under the project ''Operationalizing national safeguards for results-based payment from REDD+'' with funding from the German Government. The SIS web address is www.reddsis.fcghana.org. This SIS was launched officially on 21st December, 2020. The FC has demonstrated its dedication to boosting accountability, improving livelihoods and enhancing ecosystem resilience. The launch positioned Ghana again for positive and ambitious climate mitigation and adaptation action.

Through this participatory process it was determined that Ghana's SIS will report on the information:

1. Cancun safeguards;
2. ESMF process, policy, and outcome indicators on risks, opportunities and how they are being addressed from the project to national levels;
3. GCFRP benefit sharing;
4. Co-benefits;
5. FGRM: Indicators on grievance redress (conflicts and resolutions);
6. Additional indicators that will be determined to support effective implementation, as required.

The functions of the SIS are closely linked to the institutional arrangements, as the functions may be carried out by a single, or multiple agencies/institutions. Core functions considered by Ghana are:

- **Collection**: process of collecting raw data through information systems and sources.
- **Compilation**: process of acquiring requested information from the relevant systems and sources.
- **Aggregation**: process of aggregating, into a central repository/database, the information provided by the relevant sources and systems for the purpose of analysis.
- **Analysis**: process of undertaking a qualitative assessment of the information in order to determine to what extent the safeguards are being addressed and respected.
- **Dissemination of information**: process of disseminating, both internally (national level) and externally (international reporting) through appropriate means (e.g., website, reports, meetings with relevant stakeholders, etc.)

The SIS is populated with information that covers all the activities being carried out by NRS and all proponents of the GCFRP. Stakeholders are continuously educated on how to access and navigate the SIS web platform. The web platform provides information on the Climate Change Directorate (NRS), its functions and mandate as well as the purpose of the SIS.

The information on the web platform has been categorized per HIA under the consultations section, with GCFRP area wide (National and Sub-national) reports and documents uploaded to the library page (publications and documents). Information that is HIA specific is uploaded and

updated under the respective HIA as and when necessary. This includes data on the governance structure set up, the REDD+ activities undertaken and feedback from stakeholders. Information on the institutional arrangements under the GCFRP is also provided.

The programmes page has been populated with information on the various activities been carried out in the HIA, by which proponent of the programme and the timeframe. The FGRM page provides stakeholders with information on what FGRM is and its modalities. The page also has feedback in the form of videos from project proponents as well as various means of contact and reporting of feedback and grievances like hotlines and forms.

A SIS mobile application is been developed by the ICT department of FC with support from SNV. This mobile app is intended to be used for project screening and monitoring, providing information on GCFRP activities as well as FGRM reception and reporting.

6.0 COMPLIANCE WITH ENVIRONMENTAL AND SOCIAL SAFEGUARDS IMPLEMENTATION

A key activity under this programme is to clearly identify the associated potential environmental and social issues and concerns, both positive and negative. Thus, the potential impacts/risks of project/activities on various components of the environment and society in the HIA were identified and appropriate mitigation measures provided.

6.1 Approach to safeguards screening

The Environmental and Social Management Framework (ESMF) developed for the programme outlined potential impacts/risks on various components of the environment and society and provided appropriate measures. This subsequently led to the development of the Environmental and Social Safeguards (E&S) screening checklist. The NRS with support from the World Bank developed the Safeguards screening checklist to screen activities under the GCFRP. All activities/ interventions under the GCFRP are screened against the checklist to identify any potential risks and the appropriate mitigation measures provided. This screening takes into account both social and environmental risks within the context of the programme.

The key project activities that were screened for potential risks and for which mitigation measures were provided comprise the following:

Component One: Forest Restoration

- Modified Taungya System (MTS)
- Enrichment Planting
- Trees on farm (ToF)

Component Two: Climate smart cocoa

- Cocoa Rehabilitation
- Cocoa Diseases and Pest Control Programme (CODAPEC)
- Cocoa HiTech (Fertilizer) Programme
- Free Hybrid Cocoa Seedling Distribution
- Artificial Hand Pollination
- Mass Cocoa Pruning

Component Three: Additional livelihoods Activities/Interventions

- Train and promote economically viable and environmentally sound on-farm income diversification options:

- Vegetable farming
- Bee-keeping
- Animal husbandry

6.2 Approach to the Safeguards Monitoring

Monitoring was done to ensure / verify ESS compliance under these activities. Compliance with ESS implementation is done in two parts, namely:

a) Addressing Safeguards: that is, confirming existence of National legislative instruments, policies and measures on REDD+ Safeguards. Addressing REDD+ Safeguards could also involve National Policy Reforms that aims at reducing/ mitigating social, environmental, or economic risks from REDD+ programs/project implementation.

b) Respecting Safeguards: relating to activities undertaken to ensure that program activities triggering/ relating to safeguards requirements are being adhered to, including screening of program/project activities and outputs for risks and pre-determining measures to forestall/mitigate the risks.

6.3 Safeguards compliance of legislature and policy reform

The GCFRP is implementing an integrated set of activities (land use, policy reform on tree tenure, climate smart cocoa, community-based livelihoods, etc.) aimed at empowering local farming communities by amplifying their voice and agency in the planning, implementation, and monitoring of program activities. This program is building on the long tradition of social forestry in Ghana whereby CREMA has long since been established for the management of natural resources. To enhance greater inclusion and active participation, the HIA consortium signs contracts (Addendum to the Framework Agreement) with each farmer or via farmer groupings or associations and registers all committed cocoa farmers. Furthermore, a Farmers Contract is signed between the farmer, the HIA Governance Board and the licensed buying company consortium for future purchase. All registered cocoa farmers receive a photo ID card, an executed contract and regular training. Each HIA CSC Consortium has put together a farmer engagement package that gives farmers access to the agronomic, economic and knowledge resources to be able to achieve and maintain substantial yield increases. The engagement package includes farmer's access to:

- hybrid cocoa seeds, seedlings, or other types of planting material that are recommended under the CSC Good-Practice Guidelines;
- fertilizer (organic or inorganic) and pest/disease management products so that they can reduce losses and increase productivity on farm;
- technical extension and training opportunities to enable them to understand and follow the CSC Good-Practice Guidelines, improve their practices, and increase yields;
- professionalization services or business training opportunities so that interested farmers can realize and maximize benefits from yield increases through improved record keeping and financial literacy, enhanced professional capacity, and more detailed planning of their farm management (Farmer Business School (FBS));
- credit facilities to support their farming practices and management decisions, and to an insurance product that will reduce the considerable risk of losses associated with changing rainfall patterns and temperatures; and
- shade tree planting material and promotion of assisted natural regeneration and maintaining mature shade trees.

6.4 Tree tenure

Tree tenure is understood to refer to the bundle of rights over tree and tree products, each of which may be held by different people at different times. These rights include the right to own, inherit, dispose, use and exclude others from using trees and tree products. The concept of benefit-sharing refers to specific forms of responsibility to direct returns from the exploitation of natural resources, be they monetary or non-monetary, to various actors in the activity and the local communities, in recognition of their rights, roles and responsibilities in the activity.

The various national afforestation programs invest huge capital in creating forest estates with government, private sector, and community partnerships. However, most analyses of the underlying challenges to achieving legality in the management of off-reserve forest resources in Ghana and sustainable forest management in general conclude that 'existing tree tenure regimes is largely regarded as a disincentive to sustainable forest management' and inadequacies in the legislation and/or misinterpretations of the very complex texts relating to tree tenure and benefit sharing are at the root of the problem. Some major safeguards implications of this includes:

- Tree tenure arrangements for naturally occurring forest trees outside forest reserves where the farmers are not entitled to economically benefit from the revenue that accrue from harvesting the trees. This is a great disincentive to encouraging shaded cocoa farming systems and in broader agro-forestry systems.

6.4.1 Mitigation measures

Under the Forestry Component of the Natural Resources and Environmental Governance Technical Assistance (NREG TA), the Ministry of Lands and Natural Resources (MNLR) engaged the services of a firm to help design options for tree tenure regimes with accompanying benefit sharing mechanisms in Ghana in consultation with the FC and a wide range of stakeholders. The result of this work is expected to contribute significantly to Ghana's drive at halting deforestation, enhancing its forest estate and promoting good forest governance.

The major tree management regimes considered in this exercise are based on four main categories of arrangements viz: Naturally occurring trees on-reserve; Naturally occurring trees off-reserve; Planted trees on-reserve; and Planted trees off-reserve. Tree tenure reform and fair benefit sharing reforms are anticipated in forest and wildlife policy and this study is part of the effort by the MLNR to give currency to the policy intentions. Current tree tenure and benefit sharing are, however inadequate, based on statutory legislation and/or customary laws.

Based on synthesis of the views of various stakeholders and their preferred options for tenure and benefit sharing reform, recommendations have been made on the optimal reform options for the various tree management regimes identified. Recommended reforms, which are essential to the overall success of the programme identified through the assessment of Policies, Laws and Regulations (PLRs) and their relation to safeguards requirements include:

- Passage of the Wildlife Resources Management Bill which will support effective implementation of the 2012 Forest and Wildlife Policy.
- Policy reform on tree tenure
- Policy reform on cocoa farm inputs
- Policies to address carbon transaction rights and benefit-sharing arrangements

While efforts are still underway to put in place land-use management plan and tree tenure policy reform, the Feedback and Grievance Redress Mechanism (FGRM) that has been operationalized under the GCFRP addresses issues related to these as much as possible. Another related safeguards issue identified within the GCFRP landscape is the absence of a comprehensive national land-use plan for the country. Though the Land Use and Spatial Planning Act 2016 provides a general framework for the development of land use plans, the Act does not specifically address forested areas or agricultural lands as the focus is skewed towards urban and peri-urban planning.

As a form of mitigation, the Forest Reserve Areas are being protected against encroachment by expansionist agriculture as well as against illegal harvesting of trees. The Forestry Commission has trained personnel to patrol the forest reserve areas. In Off-Reserve areas, extension services being provided by Agric and COCOBOD extension officers are intensified and advocacy for intensification is being made as well as capacity building regarding Climate-Smart Cocoa practices are being done to reduce further deforestation outside forest reserves for agricultural purposes. These extension services as well as protection of forest is serving as a short to medium term measure whilst engagement with the Ministry of Lands and Natural Resources and the Land Use and Spatial Planning Department to elaborate clear Land Use Plan for Forest Areas.

6.5 Tree registration

As agroforestry practices are being introduced to cocoa communities, trees from different species are planted on farms. Registering these trees is critical as it give farmers tree ownership and benefit financially from any revenue generated from their sale. Also registering planted trees provides farmers rights of alienation such that, should their registered cocoa tree get destroyed during the felling of economic shade trees, they will receive compensation from the timber merchant. To mitigate this action, Ghana's MLNR, along with FC, created a tree registration form to facilitate tree registration process. The cocoa and chocolate-producing companies undertook a first-of-its-kind initiative step to digitize this form into an innovative mobile application – with capability to work both on and offline. With the many sensitizations and capacity building on forest restoration, protection of existing trees and incorporating trees on farms, a major risk is the non-registration of most farmer planted trees. This in part reduces farmer confidence and trust in the rights and benefits from tree tenure being promised. Thus, the expeditious actions

towards national validation and rolling out of tree registration modalities is crucial to the attainment of expected outcome.

6.6 REDD+ Gender mainstreaming

Gender considerations are essential to REDD+. Gender sensitive initiatives have the potential to become a conservation, poverty reduction and climate mitigation strategy. Thus REDD+ projects are designed and implemented with a gender-sensitive perspective to be efficient and effective in decreasing the gender gap. FC partnered with the International Union for the Conservation of Nature (IUCN), to develop a roadmap that would guide the design and implementation of a gender-sensitive REDD+ strategy in Ghana, which recognizes and protects the rights and interests of women and other vulnerable groups. The National REDD+ Gender Sub-Working Group (GSWG) was established as a multi-stakeholder gender advocacy group to spearhead the gender mainstreaming process and provide technical support in the review of REDD+ documents and processes to ensure gender sensitivity, as well as capacity building at the grassroot level. The GSWG was convened and subsequently trained in Accra, on Climate Change, REDD+ and its status in Ghana, the links between gender, REDD+ and safeguard issues and the importance of mainstreaming gender considerations into the REDD+.

The GSWG also liaises with decentralized institutions such as the district offices of key Government Agencies, District Assemblies, Traditional Authorities, Local Communities and Civil Society Organizations to implement actions at the sub-national level. The members of the GSWG who include representatives from different Ministries, Departments and Agencies (MDAs), Traditional Authorities, Local Communities, Academia, Private Sector and NGO/Civil Society Organizations also developed an operational plan and budget for the implementation of actions in the Gender and REDD+ Road Map.

In all activities undertaken by NRS, it is ensured there is at least 40% women representation. These include meetings, workshops, trainings and even constitution of committee members. The various structures that make up the HIA governance structure also ensure gender equity through free and fair processes. Per the Gender Action Plan:

- Training materials on sustainable management of forests and REDD+ are developed to be accessible to women.

- Training programmes (workshops, consultative meetings) on gender and REDD+ issues for implementing partners working on REDD+ issues are organised as part of sensitisation and education.
- NRS has identified and documented good practices and actions in other forest management / conservation initiatives that have fully and effectively integrated women and gender considerations.
- The capacity of local women in project areas are built to actively participate in REDD+ activities.
- Equal access and control are given to women and men in relation to tools, equipment, technology and resources needed to engage in REDD+ activities.
- NRS identified potential risks of REDD+ implementation on rights and livelihoods (with particular attention to land and natural resource use; full and effective consultation and participation; fair access to information, education to enable decision-making and consent; and equitable distribution of benefits).
- Local women are informed of their rights, safeguards and their capacity built to use FGRM or protocols systems if safeguards are violated.

Table 10: Environmental and Social Management plan for the HIA

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	RESPONSIBILITY		MONITORING FREQUENCY
					IMPLEMENTATION	MONITORING	
Modified Taungya System	Generation of smoke from burning of biomass (debris and logs) during land preparation	4.01 Environmental Assessment 4.04 Natural Habitats 4.36 Forests	• Biomass should be used as firewood and also as pegs. • Burning of biomass should be minimized as much as possible. • Workers should be required to wear suitable Personal Protective Equipment (PPE) as appropriate. • A grievance mechanism should be established to ensure any complaints/comments regarding the Project is received and responded to in a timely manner, providing solutions and taking corrective measures as appropriate.	• Site observation • Records of PPEs provided • FGRM operationalized	• Forestry Commission	• Forestry Commission	Biannual
	Exposure of workers / communities to smoke generated		• Burning of biomass should be minimized as much as possible. • Fire should be used only in situations where they are effective and least environmentally damaging	• Site observation • Records of PPEs provided • FGRM operationalized	Forestry Commission	• Forestry Commission	Biannual

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	RESPONSIBILITY		MONITORING FREQUENCY
					IMPLEMENTATION	MONITORING	
	during land preparation		• Workers should be required to wear suitable Personal Protective Equipment (PPE) as appropriate (boots and protective clothes) • A grievance mechanism should be established to ensure any complaints/comments regarding the Project are received and responded to in a timely manner, providing solutions and taking corrective measures as appropriate. Practically, recorded grievances should be checked at various points including the district offices of Forestry Commission and COCOBOD.				
	Reverse gains from carbon sequestration – adding carbon into the atmosphere		• Burning of biomass should be minimized as much as possible. • Fire should be used only in situations where they are effective and least environmentally damaging.	• Site observation	• Forestry Commission	• Forestry Commission	Biannual
	Risks of modification of natural habitat		• Environmentally sensitive sites and unnecessary exposure or access to sensitive habitats should be avoided.	• Site observation	• Forestry Commission	• Forestry Commission	Biannual

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	RESPONSIBILITY		MONITORING FREQUENCY
					IMPLEMENTATION	MONITORING	
			• Sensitive sites with high erosion risk should be identified and should not be cultivated. Vegetation of such areas should be maintained to help control erosion as well as to ensure soil stability. • Planting should be designed to include both exotic and indigenous plants in the right proportions and positions • Organic farming practices (planting nitrogen-fixing species, agroforestry practices, composting, application of organic fertilizers) should be implemented and this will help minimize the use of inorganic fertilizers and herbicides that will be major contributors to soil and surface water quality deterioration • Labour-intensive approach using simple farm tools like hoes and cutlasses should be employed.				

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	RESPONSIBILITY		MONITORING FREQUENCY
					IMPLEMENTATION	MONITORING	
	Impacts on flora and fauna		• Environmentally sensitive sites and unnecessary exposure or access to sensitive habitats should be avoided • Planting should be designed to include both exotic and indigenous plants in the right proportions and positions • Organic farming practices (planting nitrogen-fixing species, agroforestry practices, composting, application of organic fertilizers) should be implemented and this will help minimize the use of inorganic fertilizers and herbicides that will be major contributors to soil and surface water quality deterioration • Measures to correct low soil pH should be implemented as much as possible: - Farmers should be assisted to avoid the use of acidifying nitrogen-based fertilizers where soil pH is low as part of the regular community-level trainings conducted by COCOBOD Extension Officers as well as	• Site observation • Training report	• Forestry Commission	• Forestry Commission	Biannual

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	RESPONSIBILITY		MONITORING FREQUENCY
					IMPLEMENTATION	MONITORING	
			other institutions such the Department of Agric and the Environmental Protection Agency (EPA) - Efficient fertilizer use considers the prescribed dosage, period or timing and intervals of application, and release properties • Labour-intensive approach using simple farm tools like hoes and cutlasses should be employed.				
	Risks of Accelerated erosion		• Sensitive sites with high erosion risk should be identified and should not be cultivated. Vegetation of such areas should be maintained to help control erosion as well as to ensure soil stability • Standard erosion and sediment control best management practices should be implemented.	• Site observation	• Forestry Commission	• Forestry Commission	Biannual

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	RESPONSIBILITY		MONITORING FREQUENCY
					IMPLEMENTATION	MONITORING	
	Risks of Planting single tree species		• Planting should be designed to include variety of both exotic and indigenous plants in the right proportions and positions • The procurement of diversified seedlings should be planned and strategized.	• Site observation • Records of seedlings supplied	• Forestry Commission	• Forestry Commission	Biannual
	Alterations in local natural water cycles/ hydrology		• There should be a promotion of buffer zones along the local streams to ensure their integrity and protection of other aquatic life forms. The buffer reserves serve as natural filters for surface runoff from the planting areas. The reserves also play a major role in protecting the banks of the waterways from channel erosion. • Throughout the project cycle, standard erosion and sediment control best management practices should be implemented.	• Site observation	• Forestry Commission	• Forestry Commission	Biannual
	Risks of pollution / contamination of water bodies		• The use of agrochemicals including inorganic fertilizers, weedicides and pesticides should be reduced as much as possible. Where possible,	• Site observation • Number of farmers trained	• Forestry Commission	• Forestry Commission	Biannual

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	RESPONSIBILITY		MONITORING FREQUENCY
					IMPLEMENTATION	MONITORING	
	(herbicides, pesticides, insecticides, weedicides, ash, dust)		mechanical weed control should be considered instead of the use of weedicides. • Buffer zones along the local streams should be promoted to ensure their integrity and protection of other aquatic life forms. The buffer reserves serve as natural filters for surface runoff from the planting areas. The reserves also play a major role in protecting the banks of the waterways from channel erosion. • Farmers should be trained and provided with tools to create buffer of no-spray zones in farms with close proximity to water body(s) • Farmers whose farms are located along water bodies should be provided with technical assistance to leave a vegetation cover as a buffer zone along the water bodies. • Standard erosion and sediment control best management practices should be implemented.	• Training report			

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	RESPONSIBILITY		MONITORING FREQUENCY
					IMPLEMENTATION	MONITORING	
			• Organic farming practices (planting nitrogen-fixing species, agroforestry practices, composting, application of organic fertilizers) should be implemented and this will help minimize the use of inorganic fertilizers and herbicides that are major contributors to soil and surface water quality deterioration				
	Impacts of Poor site selection		• Good site selection taking into consideration condition score, natural regeneration potential and basal area should be ensured.	• Site observation	• Forestry Commission	• Forestry Commission	Biannual
	Risks of Improper disposal of chemical containers		• The use of agrochemicals including inorganic fertilizers, weedicides and pesticides should be reduced as much as possible. Where possible, mechanical weed control should be considered instead of the use of weedicides The requirements of applicable waste management regulations for the management of all waste generated as a result of the project activities should be complied with.	• Training report • Awareness creation materials displayed • List of approved and unapproved agrochemicals shared	• Forestry Commission	• Forestry Commission	Biannual

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	RESPONSIBILITY		MONITORING FREQUENCY
					IMPLEMENTATION	MONITORING	
			• There should be education and sensitization on the proper disposal of hazardous waste and material.				
	Risks of disposal of polybags		• There should be education and sensitization on the proper disposal of polybags	• Site Observation	• Forestry Commission	• Forestry Commission	Biannual
	Potential Land allocation conflicts		• Forest Management plan should be prepared for all sites to reflect community expectations • Technical assistance should be offered in land allocation • A grievance mechanism should be established to ensure any complaints / comments regarding the Project are received and responded to in a timely manner, providing solutions and taking corrective measures as appropriate	• Forest Management plan • FGRM operationalized • On-site verification with farmers	• Forestry Commission	• Forestry Commission	Biannual
	Inadequate engagement with local communities		• Stakeholder consultations should be done to identify best practices and guide implementation in partnership with traditional authorities.	• Engagement report • Forest Management plan	• Forestry Commission	• Forestry Commission	Biannual

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	RESPONSIBILITY		MONITORING FREQUENCY
					IMPLEMENTATION	MONITORING	
			• Forest Management plan should be prepared for all sites to reflect community expectations • Equal opportunity should be given to all abled bodied persons who wants to participate				
	Poor records of primary supply and contract workers		• Proper records of workers should be kept and updated as appropriate	• Records of workers	• Forestry Commission	• Forestry Commission	Biannual
	Unfair allocation of more lands to families/persons/groups		• Equal opportunity should be given to all abled bodied persons who wants to participate • A grievance mechanism should be established to ensure any complaints / comments regarding the Project are received and responded to in a timely manner, providing solutions and taking corrective measures as appropriate	• On-site verification with farmers • FGRM operationalized	• Forestry Commission	• Forestry Commission	Biannual
	Failure to honour MTS benefit arrangement		• Engagement of MTS beneficiaries on the right percentages due them should be ensured.	• Records of engagement	• Forestry Commission	• Forestry Commission	Biannual

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	RESPONSIBILITY		MONITORING FREQUENCY
					IMPLEMENTATION	MONITORING	
	Low percentage of women accessing lands		• Equal opportunity should be given to all women who wants to participate	• Records of farmers	• Forestry Commission	• Forestry Commission	Biannual
	Unavailability and no/limited use of personal protective equipment		• Workers should be required to wear suitable Personal Protective Equipment (PPE) as appropriate. • Education and sensitization should be done on the need for and proper usage of PPEs	• Records of PPE supply • Confirmation with workers	• Forestry Commission	• Forestry Commission	Biannual
	Limited awareness creation programs on health and safety including chemical handling.		• There should be a design and implementation of awareness creation programs to educate persons on protecting workers' health and safety including paying attention to chemical handling. • Workers should be required to wear suitable Personal Protective Equipment (PPE) as appropriate.	• On-site verification with farmers • Confirmation with workers	• Forestry Commission	• Forestry Commission	Biannual
Enrichment Planting	Improper disposal of polybags	4.01 Environmental Assessment	• There should be education and sensitization on the proper disposal of polybags	• Site Observation	• Forestry Commission	• Forestry Commission	Biannual

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	RESPONSIBILITY		MONITORING FREQUENCY
					IMPLEMENTATION	MONITORING	
	Poor record keeping of primary supply workers	4.04 Natural Habitats 4.36 Forests	• Employment and other opportunities should be given to local communities as much as possible. • Proper records of workers should be kept and updated as appropriate	• Confirmation with communities	• Forestry Commission	• Forestry Commission	Biannual
	Poor record keeping of contract workers				• Forestry Commission	• Forestry Commission	Biannual
	Unavailability and no/limited use of personal protective equipment		• Workers should be required to wear suitable Personal Protective Equipment (PPE) as appropriate. • Education and sensitization should be done on the need for and proper usage of PPEs	• Confirmation with communities • Site observation	• Forestry Commission	• Forestry Commission	Biannual
	Limited awareness creation programs on health and safety		• There should be a design and implementation of awareness creation programs to educate persons on protecting workers' health and safety including paying attention to chemical handling. • Workers should be required to wear suitable Personal Protective Equipment (PPE) as appropriate.	• Confirmation with communities • On-site verification with farmers	• Forestry Commission	• Forestry Commission	Biannual

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	RESPONSIBILITY		MONITORING FREQUENCY
					IMPLEMENTATION	MONITORING	
	Delay in payment of contract workers		• Workers should be paid on time	• Records of payments	• Forestry Commission	• Forestry Commission	Biannual
Trees on Farms	Disturbance of flora and fauna	4.01 Environmental Assessment 4.04 Natural Habitats 4.09 Pest Management 4.36 Forests	• Environmentally sensitive sites and unnecessary exposure or access to sensitive habitats should be avoided • Planting should be designed to include both exotic and indigenous plants in the right proportions and positions • Organic farming practices should be implemented and this helped minimize the use of inorganic fertilizers and herbicides that are major contributors to soil and surface water quality deterioration • Labour-intensive approach using simple farm tools like hoes and cutlasses should be employed.	• Site observation	• Forestry Commission • COCOBOD • Other stakeholders	• Forestry Commission • COCOBOD • Other stakeholders	Biannual
	Planting single tree species		• Planting should be designed to include variety of both exotic and indigenous plants in the right proportions and positions	• Site observation	• Forestry Commission	• Forestry Commission	Biannual

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	RESPONSIBILITY		MONITORING FREQUENCY
					IMPLEMENTATION	MONITORING	
			• The procurement of desirable and diversified seedlings should be planned and strategized.	• Records of seedlings supplied	• COCOBOD • Other stakeholders	• COCOBOD • Other stakeholders	
	Planting/ keeping shade tree with undesirable characteristics e.g., Disease prone shade trees, host of pest and diseases, easily broken branches etc.				• Forestry Commission • COCOBOD • Other stakeholders	• Forestry Commission • COCOBOD • Other stakeholders	Biannual
	Planting inadvisable shade tree species e.g., invasive species				• Forestry Commission • COCOBOD	• Forestry Commission • COCOBOD	Biannual

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	RESPONSIBILITY		MONITORING FREQUENCY
					IMPLEMENTATION	MONITORING	
					• Other stakeholders	• Other stakeholders	
	Planting more trees than required leading to over-shadowing of cocoa farms.		• Farms should be mapped to determine farm sizes and site/area specific conditions to avoid over supply of seedlings • Thinning out should be done to adjust the number of trees on the farms		• Forestry Commission • COCOBOD • Other stakeholders	• Forestry Commission • COCOBOD • Other stakeholders	Biannual
	Limited understanding on shade tree management.		• Education/ adequate trainings should be provided to farmers	• Training report	• Forestry Commission • COCOBOD • Other stakeholders	• Forestry Commission • COCOBOD • Other stakeholders	Biannual

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	RESPONSIBILITY		MONITORING FREQUENCY
					IMPLEMENTATION	MONITORING	
	Destruction from harvesting of timber resources on farm		• A grievance mechanism should be established to ensure any complaints/comments regarding the Project is received and responded to in a timely manner, providing solutions and taking corrective measures as appropriate • Appropriate sanctions should be applied on offenders including fines and jail sentences	• FGRM operationalized • Reports	• Forestry Commission • COCOBOD • Other stakeholders	• Forestry Commission • COCOBOD • Other stakeholders	Biannual
	Failure to register farmers		• Records of farmers should be kept	• Records of farmers	• Forestry Commission • COCOBOD • Other stakeholders	• Forestry Commission • COCOBOD • Other stakeholders	Biannual
	Limited awareness creation on health and safety including tools and		• There should be a design and implementation of awareness creation programs to educate persons on protecting workers' health and	• Training report • On-site verification with farmers	• Forestry Commission • COCOBOD	• Forestry Commission	Biannual

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	RESPONSIBILITY		MONITORING FREQUENCY
					IMPLEMENTATION	MONITORING	
	equipment handling		safety including paying attention to chemical and equipment handling. • Workers were required to wear suitable Personal Protective Equipment (PPE) as appropriate		• Other stakeholders	• COCOBOD • Other stakeholders	
	Unavailability and no/limited use of personal protective equipment		• Workers were required to wear suitable Personal Protective Equipment (PPE) as appropriate. • Education and sensitization were done on the need for and proper usage of PPEs	• Records of PPE supply • Training report	• Forestry Commission • COCOBOD • Other stakeholders	• Forestry Commission • COCOBOD • Other stakeholders	Biannual
Climate Smart Cocoa	Exposure of local folks (farmers) to chemicals during and after application of agrochemical on cocoa farmers.	4.01 Environmental Assessment 4.04 Natural Habitats	• Workers should be required to wear suitable Personal Protective Equipment (PPE) as appropriate. • Education and sensitization were done on the need for and proper usage of PPEs • The use of agrochemicals including inorganic fertilizers, weedicides and pesticides should be	• Records of PPE supply • Training report	• Forestry Commission • COCOBOD • Other stakeholders	• Forestry Commission • COCOBOD	Biannual

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	RESPONSIBILITY		MONITORING FREQUENCY
					IMPLEMENTATION	MONITORING	
		4.09 Pest Management	reduced as much as possible. Where possible, mechanical weed control should be considered instead of the use of weedicides.			• Other stakeholders	
	Generation of fumes during cutting down of diseased or over-aged cocoa trees.	4.36 Forests	• Burning of biomass should be minimized as much as possible • Fire should be used only in situations where they will be effective and least environmentally damaging • The use of agrochemicals including inorganic fertilizers, weedicides and pesticides should be reduced as much as possible. Where possible, mechanical weed control should be considered instead of the use of weedicides.	• Site observation • Records of PPEs provided	• Forestry Commission • COCOBOD • Other stakeholders	• Forestry Commission • COCOBOD • Other stakeholders	Biannual
	Impacts on flora and fauna		• Environmentally sensitive sites and unnecessary exposure or access to sensitive habitats should be avoided • Planting should be designed to include both exotic and indigenous plants in the right proportions and positions	• Site observation	• Forestry Commission • COCOBOD • Other stakeholders	• Forestry Commission • COCOBOD	Biannual

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	RESPONSIBILITY		MONITORING FREQUENCY
					IMPLEMENTATION	MONITORING	
			• Organic farming practices (planting nitrogen-fixing species, agroforestry practices, composting, application of organic fertilizers) should be implemented and this will help minimize the use of inorganic fertilizers and herbicides that are major contributors to soil and surface water quality deterioration • Labour-intensive approach using simple farm tools like hoes and cutlasses should be employed.			• Other stakeholders	
	Land clearing and vegetation loss at rehab farms		• Organic farming practices (planting nitrogen-fixing species, agroforestry practices, composting, application of organic fertilizers) should be implemented and this will help minimize the use of inorganic fertilizers and herbicides that are major contributors to soil and surface water quality deterioration • Labour-intensive approach using simple farm tools like hoes and cutlasses should be employed.	• Site observation	• Forestry Commission • COCOBOD • Other stakeholders	• Forestry Commission • COCOBOD • Other stakeholders	Biannual

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	RESPONSIBILITY		MONITORING FREQUENCY
					IMPLEMENTATION	MONITORING	
			• Felled trees and cleared under- brushes should be chipped and formed into windrows and allowed to decompose and/or used as pegs for planting.				
	Risks of accelerated erosion		• Sensitive sites with high erosion risk should be identified and should not cultivated. Vegetation of such areas should be maintained to help control erosion as well as to ensure soil stability • Standard erosion and sediment control best management practices should be Implemented	• Site observation	• Forestry Commission • COCOBOD • Other stakeholders	• Forestry Commission • COCOBOD • Other stakeholders	Biannual
	Risks of pollution / contamination of water bodies with herbicides, pesticides, insecticides, weedicides, ash, dust)		• The use of agrochemicals including inorganic fertilizers, weedicides and pesticides should be reduced as much as possible. Where possible, mechanical weed control should be considered instead of the use of weedicides. • Buffer zones along the local streams should be promoted to ensure their integrity and protection of other aquatic life forms. The	• Site observation • Training report	• Forestry Commission • COCOBOD • Other stakeholders	• Forestry Commission • COCOBOD • Other stakeholders	Biannual

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	RESPONSIBILITY		MONITORING FREQUENCY
					IMPLEMENTATION	MONITORING	
			buffer reserves serve as natural filters for surface runoff from the planting areas. The reserves also play a major role in protecting the banks of the waterways from channel erosion. • Farmers should be trained and provided with tools to create buffer of no-spray zones in farms with close proximity to water body(s) • Farmers whose farms are located along water bodies should be provided with technical assistance to leave a vegetation cover as a buffer zone along the water bodies. • Standard erosion and sediment control best management practices should be implemented. • Organic farming practices (planting nitrogen-fixing species, agroforestry practices, composting, application of organic fertilizers) should be implemented and this will help minimize the use of inorganic fertilizers and				

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	RESPONSIBILITY		MONITORING FREQUENCY
					IMPLEMENTATION	MONITORING	
			herbicides that are major contributors to soil and surface water quality deterioration				
	Risks involved with the harvesting of timber resources		• A grievance mechanism should be established to ensure any complaints / comments regarding the Project is received and responded to in a timely manner, providing solutions and taking corrective measures as appropriate • Appropriate sanctions should be applied on offenders including fines and jail sentences	• FGRM operationalized	• Forestry Commission • COCOBOD • Other stakeholders	• Forestry Commission • COCOBOD • Other stakeholders	Biannual
	Cultivating cocoa without adherence to the buffer zone policy		• Farmers should be trained and provided with tools to create buffer of no-spray zones in farms in close proximity to water body(s) • Farmers whose farms are located along water bodies should be provided with technical assistance to leave a vegetation cover as a buffer zone along the water bodies. • Technical officers and farm inspectors should sample and visit farms to check compliance	• Training report • Site observation	• Forestry Commission • COCOBOD • Other stakeholders	• Forestry Commission • COCOBOD • Other stakeholders	Biannual

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	RESPONSIBILITY		MONITORING FREQUENCY
					IMPLEMENTATION	MONITORING	
	Increase in pests and disease due to too much shade and undesirable shade trees		• Producers (farmers) should be trained on pruning techniques to reduce unnecessary shade • Producers (farmers) should be trained to control pest using the Integrated Pest Management (IPM) techniques to use only approved crop protection products for all other crops fields.	• Site observation • Training report	• Forestry Commission • COCOBOD • Other stakeholders	• Forestry Commission • COCOBOD • Other stakeholders	Biannual
	Involve the use of unapproved/ not recommended agrochemicals (weedicides, pesticides, insecticides etc.)		• Awareness should be raised on the list of approved agro-inputs and the list shared/pasted at vantage points for public viewing	• Confirmation with communities • List of approved and unapproved agrochemicals shared	• Forestry Commission • COCOBOD • Other stakeholders	• Forestry Commission • COCOBOD • Other stakeholders	Biannual
	Over-use of agro-inputs such as fertilizers and agro-chemicals.		• The use of agrochemicals including inorganic fertilizers, weedicides and pesticides should be reduced as much as possible. Where possible,	• Training report • List of approved and unapproved	• Forestry Commission • COCOBOD	• Forestry Commission	Biannual

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	RESPONSIBILITY		MONITORING FREQUENCY
					IMPLEMENTATION	MONITORING	
			mechanical weed control should be considered instead of the use of weedicides. • Education and sensitization should be done on the proper use and dosage of agro-inputs	agrochemicals shared	• Other stakeholders	• COCOBOD • Other stakeholders	
	Use of fire during land preparation		• Fire should be used only in situations where this was effective and least environmentally damaging • Workers should be required to wear suitable Personal Protective Equipment (PPE) as appropriate.	• Site observation • Records of PPEs provided	• Forestry Commission • COCOBOD • Other stakeholders	• Forestry Commission • COCOBOD • Other stakeholders	Biannual
	Limited and/or untimely supply of cocoa seedlings		• Seedlings should be supplied on time to meet onset of reliable rainfall • Seedlings should be sourced within close proximity/catchment area	• Records of seedlings supply	• Forestry Commission • COCOBOD • Other stakeholders	• Forestry Commission • COCOBOD	Biannual

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	RESPONSIBILITY		MONITORING FREQUENCY
					IMPLEMENTATION	MONITORING	
						• Other stakeholders	
	Establishing new farms cocoa farms within forest reserves.		• Admitted farmers that expanded beyond allowed limits should be made to return to the permitted areas only • District Assembly by-laws should be used to support the conservation of dedicated forests and to sanction encroachment • Farmers should be trained and encouraged to involve in alternative livelihood programs to prevent the risk of expansion in to protected areas.	• Engagement/training Reports • Records of admitted farms • DA by-laws	• Forestry Commission • COCOBOD • Other stakeholders	• Forestry Commission • COCOBOD • Other stakeholders	Biannual
	Generation of hazardous waste such as arboricides, herbicides, weedicides, and pesticides.		• Mass sprayers who spray agro-chemicals for farmers should be cautioned and educated on proper disposal of chemical containers after use • Famers should be encouraged to report hazardous activities of neighbors to through the FGRM for correction remedy	• Training report • Awareness creation materials displayed • List of approved and unapproved	• Forestry Commission • COCOBOD • Other stakeholders	• Forestry Commission • COCOBOD	Biannual

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	RESPONSIBILITY		MONITORING FREQUENCY
					IMPLEMENTATION	MONITORING	
			• Training on safe chemical application should be given • Spraying gangs (farmer) should be trained on how to wear PPEs and the essence of PPEs.	agrochemicals shared • FGRM operationalized		• Other stakeholders	
	Risks with transportation of hazardous chemicals (arboricides, herbicides, weedicides, and pesticides)				• Forestry Commission • COCOBOD • Other stakeholders	• Forestry Commission • COCOBOD • Other stakeholders	Biannual
	Improper disposal of hazardous waste				• Forestry Commission • COCOBOD • Other stakeholders	• Forestry Commission • COCOBOD • Other stakeholders	Biannual

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	RESPONSIBILITY		MONITORING FREQUENCY
					IMPLEMENTATION	MONITORING	
	Poor storage of hazardous chemicals				• Forestry Commission • COCOBOD • Other stakeholders	• Forestry Commission • COCOBOD • Other stakeholders	Biannual
	Recycle of hazardous chemicals				• Forestry Commission • COCOBOD • Other stakeholders	• Forestry Commission • COCOBOD • Other stakeholders	Biannual
	Improper or poor records keeping of direct workers		• Employment and other opportunities should be given to local communities as much as possible.	• Records of workers	• Forestry Commission • COCOBOD	• Forestry Commission	Biannual

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	RESPONSIBILITY		MONITORING FREQUENCY
					IMPLEMENTATION	MONITORING	
			• Proper records of workers should be kept and updated as appropriate		• Other stakeholders	• COCOBOD • Other stakeholders	
	Improper or poor records keeping of contracted workers				• Forestry Commission • COCOBOD • Other stakeholders	• Forestry Commission • COCOBOD • Other stakeholders	Biannual
	Improper or poor records of primary supply workers				• Forestry Commission • COCOBOD • Other stakeholders	• Forestry Commission • COCOBOD	Biannual

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	RESPONSIBILITY		MONITORING FREQUENCY
					IMPLEMENTATION	MONITORING	
						• Other stakeholders	
	Potentially could cause or aggravate land-use conflicts		• A grievance mechanism should be established to ensure any complaints/comments regarding the Project is received and responded to in a timely manner, providing solutions and taking corrective measures as appropriate • Stakeholder consultations should be done to identify best practices and guide implementation in partnership with traditional authorities • Forest Management plan should be prepared for all sites to reflect community expectations • Admitted farmers that expands beyond allowed limits should be made to return to the permitted areas only • District Assembly by-laws should be used to support the conservation of dedicated forests and to sanction encroachment	• FGRM operationalized • Forest Management plan • Engagement/training Reports • Records of admitted farms • DA by-laws	• Forestry Commission • COCOBOD • Other stakeholders	• Forestry Commission • COCOBOD • Other stakeholders	Biannual

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	RESPONSIBILITY		MONITORING FREQUENCY
					IMPLEMENTATION	MONITORING	
	Unavailability and no/limited use of personal protective equipment		• Workers should be required to wear suitable Personal Protective Equipment (PPE) as appropriate. • Sensitization should be done on the need for and proper usage of PPEs	• Confirmation with workers	• Forestry Commission • COCOBOD • Other stakeholders	• Forestry Commission • COCOBOD • Other stakeholders	Biannual
	Limited awareness creation of programs on health and safety including chemical handling		• There should be a design and implementation of awareness creation programs to educate persons on protecting workers' health and safety including paying attention to chemical handling. • Workers should be required to wear suitable Personal Protective Equipment (PPE) as appropriate	• Training report • On-site verification with farmers	• Forestry Commission • COCOBOD • Other stakeholders	• Forestry Commission • COCOBOD • Other stakeholders	Biannual
Additional livelihoods Activities/Interventions	Generation of smoke from burning of biomass (debris and logs)	4.01 Environmental Assessment	• Biomass generated should be used as firewood and also as pegs. Burning of biomass should be minimized as much as possible.	• Site observation • Records of PPEs provided	• Forestry Commission • COCOBOD	• Forestry Commission	Biannual

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	RESPONSIBILITY		MONITORING FREQUENCY
					IMPLEMENTATION	MONITORING	
	during land preparation for vegetable farming	4.04 Habitats 4.09 Pest Management 4.36 forests	• Workers should be required to wear suitable Personal Protective Equipment (PPE) as appropriate • A grievance mechanism should be established to ensure any complaints/comments regarding the Project is received and responded to in a timely manner, providing solutions and taking corrective measures as appropriate	• FGRM operationalized	• Other stakeholders	• COCOBOD • Other stakeholders	
	Exposure of workers / communities to smoke generated during land preparation for vegetable farming		• Burning of biomass should be minimized as much as possible • Fire should be used only in situations where this was effective and least environmentally damaging • Workers should be required to wear suitable Personal Protective Equipment (PPE) as appropriate • A grievance mechanism should be established to ensure any complaints/comments regarding the Project is received and responded to in a	• Site observation • Records of PPEs • FGRM operationalized	• Forestry Commission • COCOBOD • Other stakeholders	• Forestry Commission • COCOBOD • Other stakeholders	Biannual

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	RESPONSIBILITY		MONITORING FREQUENCY
					IMPLEMENTATION	MONITORING	
			timely manner, providing solutions and taking corrective measures as appropriate.				
	Risks of pollute/contaminate water bodies (herbicides, pesticides, insecticides, weedicides, ash etc.)		• The use of agrochemicals including inorganic fertilizers, weedicides and pesticides should be reduced as much as possible. Where possible, mechanical weed control should be considered instead of the use of weedicides. • Buffer zones along the local streams should be promoted to ensure their integrity and protection of other aquatic life forms. The buffer reserves serve as natural filters for surface runoff from the planting areas. The reserves also play a major role in protecting the banks of the waterways from channel erosion. • Farmers should be trained and provided with tools to create buffer of no-spray zones in farms with close proximity to water body(s) • Farmers whose farms are located along water bodies should be provided with technical	• Site observation • Training report	• Forestry Commission • COCOBOD • Other stakeholders	• Forestry Commission • COCOBOD • Other stakeholders	Biannual

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	RESPONSIBILITY		MONITORING FREQUENCY
					IMPLEMENTATION	MONITORING	
			assistance to leave a vegetation cover as a buffer zone along the water bodies. • Standard erosion and sediment control best management practices should be implemented. • Organic farming practices (planting nitrogen-fixing species, agroforestry practices, composting, application of organic fertilizers) should be implemented and this will help minimize the use of inorganic fertilizers and herbicides that are major contributors to soil and surface water quality deterioration				
	Potential Risks of locating activities within buffer zones or water bodies		• Buffer zones along the local streams should be promoted to ensure their integrity and protection of other aquatic life forms. The buffer reserves serve as natural filters for surface runoff from the planting areas. The reserves also play a major role in protecting the banks of the waterways from channel erosion.	• Site observation • Training report	• Forestry Commission • COCOBOD • Other stakeholders	• Forestry Commission • COCOBOD • Other stakeholders	Biannual

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	RESPONSIBILITY		MONITORING FREQUENCY
					IMPLEMENTATION	MONITORING	
			• Farmers should be trained to create buffer of no-spray zones in farms in close proximity to water body(s) • Farmers whose farms are located along water bodies should be provided with technical assistance to leave a vegetation cover as a buffer zone along the water bodies. • Technical officers and farm inspectors should sample and visit farms to check compliance				
	Use of fire during land preparation		• Fire should be used only in situations where they will be effective and least environmentally damaging • Most biomass generated should be used as firewood and also as pegs • burning of biomass should be minimized as much as possible • Workers should be required to wear suitable Personal Protective Equipment (PPE) as appropriate	• Site observation • Records of PPEs provided • Training report • FGRM operationalized	• Forestry Commission • COCOBOD • Other stakeholders	• Forestry Commission • COCOBOD • Other stakeholders	Biannual

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	RESPONSIBILITY		MONITORING FREQUENCY
					IMPLEMENTATION	MONITORING	
			• A grievance mechanism should be established to ensure any complaints/comments regarding the Project is received and responded to in a timely manner, providing solutions and taking corrective measures as appropriate				
	Over-use of agro-inputs such fertilizers and agro-chemicals		• The use of agrochemicals including inorganic fertilizers, weedicides and pesticides should be reduced as much as possible. Where possible, mechanical weed control should be considered instead of the use of weedicides. • Education and sensitization were done on the proper use and dosage of agro-inputs	• Training report • List of approved and unapproved agrochemicals shared	• Forestry Commission • COCOBOD • Other stakeholders	• Forestry Commission • COCOBOD • Other stakeholders	Biannual
	Limited and/or untimely supply of cocoa seedlings		• Seedlings should be supplied on time to meet onset of reliable rainfall • Seedlings should be sourced within close proximity/catchment area	• Records of seedlings supply	• Forestry Commission • COCOBOD • Other stakeholders	• Forestry Commission • COCOBOD	Biannual

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	RESPONSIBILITY		MONITORING FREQUENCY
					IMPLEMENTATION	MONITORING	
						• Other stakeholders	
	Lead to the transportation of hazardous chemicals (herbicides, weedicides, and pesticides)		• Mass sprayers who spray agro chemicals for farmers should be cautioned and educated on proper disposal of chemical containers after use • Famers should be encouraged to report hazardous activities of neighbours to through the FGRM for correction remedy • Training on safe chemical application should be given • Trained farmers on how to wear PPEs and the essence of PPEs.	• Training report • Awareness creation materials displayed • List of approved and unapproved agrochemicals shared • FGRM operationalized	• Forestry Commission • COCOBOD • Other stakeholders	• Forestry Commission • COCOBOD • Other stakeholders	Biannual
	Generation of hazardous waste such as herbicides, weedicides, and pesticides.				• Forestry Commission • COCOBOD • Other stakeholders	• Forestry Commission • COCOBOD • Other stakeholders	Biannual

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	RESPONSIBILITY		MONITORING FREQUENCY
					IMPLEMENTATION	MONITORING	
	Improper disposal of hazardous waste				• Forestry Commission • COCOBOD • Other stakeholders	• Forestry Commission • COCOBOD • Other stakeholders	Biannual
	Improper storage of hazardous waste				• Forestry Commission • COCOBOD • Other stakeholders	• Forestry Commission • COCOBOD • Other stakeholders	Biannual
	Improper or poor records keeping of workers		• Employment and other opportunities should be given to local communities as much as possible.	• Records of workers	• Forestry Commission • COCOBOD	• Forestry Commission	Biannual

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	RESPONSIBILITY		MONITORING FREQUENCY
					IMPLEMENTATION	MONITORING	
			• Proper records of workers should be kept and updated as appropriate		• Other stakeholders	• COCOBOD • Other stakeholders	
	Potential aggravation of land-use conflicts		• A grievance mechanism should be established to ensure any complaints/ comments regarding the Project is received and responded to in a timely manner, providing solutions and taking corrective measures as appropriate • Stakeholder consultations should be done to identify best practices and guide implementation in partnership with traditional authorities • Forest Management plan should be prepared for all sites to also reflect community expectations	• FGRM operationalized • Forest Management plan • Engagement/training Reports • Records of admitted farms • DA by-laws	• Forestry Commission • COCOBOD • Other stakeholders	• Forestry Commission • COCOBOD • Other stakeholders	Biannual

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	RESPONSIBILITY		MONITORING FREQUENCY
					IMPLEMENTATION	MONITORING	
			• District Assembly byelaws should be used to support the conservation of dedicated forests and to sanction encroachment • Admitted farmers that expands beyond allowed limits should be made to return to the permitted areas only				
	Low percentage of women in livelihood improvement activities		• Employment and other opportunities should be given to local communities as much as possible. • Equal opportunity should be given to all abled bodied persons who wants to participate	• Records of farmers	• Forestry Commission • COCOBOD • Other stakeholders	• Forestry Commission • COCOBOD • Other stakeholders	Biannual
	Prioritization of a few demographic in terms of labour				• Forestry Commission • COCOBOD	• Forestry Commission • COCOBOD	Biannual

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	RESPONSIBILITY		MONITORING FREQUENCY
					IMPLEMENTATION	MONITORING	
					• Other stakeholders	• Other stakeholders	
	Unfair selection of beneficiaries				• Forestry Commission • COCOBOD • Other stakeholders	• Forestry Commission • COCOBOD • Other stakeholders	Biannual
	Limited awareness creation of programs on health and safety issues		• There should be a design and implementation of awareness creation programs to educate persons on protecting workers' health and safety including paying attention to chemical and equipment handling. • Workers should be required to wear suitable Personal Protective Equipment (PPE) as appropriate	• On-site verification with farmers	• Forestry Commission • COCOBOD • Other stakeholders	• Forestry Commission • COCOBOD • Other stakeholders	Biannual

ACTIVITY	RISKS	OP TRIGGERED	MITIGATION MEASURES	INDICATOR/ MEANS OF VERIFICATION	RESPONSIBILITY		MONITORING FREQUENCY
					IMPLEMENTATION	MONITORING	
Wildlife protection and management	Public health risks resulting from poor beekeeping management practices	4.01 Environmental Assessment 4.04 Habitats 4.36 Forests	• Beehives should be sited in safe environment away from settlements and people • Protective gears should be put on when performing operational activities on beehives • Honey extraction equipment should be kept safe and professionally cleaned during and after use • Community members should be sensitized on the locations of beehives • Warming signals should be strategically placed in locations of beehives to turn off people.	• State of beekeeping protective gears and extraction equipment • Field observation • Report • Evidence of warning signals	• Forestry Commission	• Forestry Commission	Biannual

NB: With regards to Personal Protective Equipment (PPE), stakeholders are entreated to protect themselves as much as possible even in the absence of industrial grade PPE. That is, clothing that covers every inch of the body like PPE would (long sleeved shirts, jeans, boots/footwear, mask).

7.0 OPERATIONALISATION OF FEEDBACK AND GRIEVANCE REDRESS MECHANISM (FGRM)

Feedback and Grievance Redress Mechanism (FGRM) is generally designed to be the "first line" of receipt and response to stakeholder feedback and/or concerns from implementation of GCFRP activities. This mechanism provides an enabling environment and structures for stakeholders to provide feedback and also access support for conflict resolution resulting from the program activities. Not all complaints/ conflicts are handled through the FGRM. Complaints of acts of criminal nature or grievances that allege corruption, coercion, or major and systematic violations of rights and/or policies are normally referred to organizational accountability mechanisms or administrative or judicial bodies for formal investigation, rather than to FGRMs for collaborative problem solving.

FGRMs are intended to be accessible, collaborative, expeditious, and effective in resolving concerns through dialogue, joint fact-finding, negotiation, and problem solving.

The programme document identified potential conflict sources for categorising grievances. The potential conflict sources are;

Type of Conflict	Potential Areas
Resource use and access	Access to forest resources and land use rights. Access to resource, including CSC farming packages, insurance, extension and training are important elements of the BSP. It is possible, that during implementation, farmers or communities could context their access to the resources laid out in the GCFRP plan and how effectively they have been shared.
Land and tree tenure	Land (boundary), tree and carbon rights. The integration of REDD+ activities into existing tenure arrangements could result in new relationships or agreements between key actors like the state, traditional authorities and community stakeholders. If not carefully negotiated, it could create the potential for conflict. In addition, issues related to boundaries, land use, and user rights to tree and land could become more contentious and any latent conflicts or boundary disputes could be revived among traditional authorities, tenant farmers and landholders. If carbon rights are bundled with tree rights, then the existing confusion about tree ownership rights are likely to renew conflicts between the farmers, and landowners.

Benefit Sharing	Who gets what, and how much. The NRS has been very conservative in its consultations and sensitizations on REDD+ and the potential benefits. Nonetheless, as implementation begins perceptions of what benefits should accrue, to whom, and how could lead to conflicts. Clear discussions and agreements at the HIA level on carbon and non-carbon benefits will be crucial. But even when the BSP is clear and agreement is reached at the local level, conflicts can still emerge over time, as has happened with other legally backed benefits sharing arrangements, like that of the Social Responsibility Agreements (SRA) under legal timber operation. The FGRM will be important in helping to clarity issues and resolve conflicts.
Participation and inclusiveness	Representation in decision-making and right of consultation, including gender participation. Consistent with the National REDD+ Strategy, mainstreaming gender and equity concerns at all levels and in all decision making, particularly within HIAs, is key. The REDD+ Gender Road map led to the formulation of a gender strategy for the GCFRP. However, it is possible that groups who tend to carry less “power” within society (e.g. marginalized groups) such as women, children and migrants could feel that their interests are not adequately reflected in the HIA decision-making process, in the implementation of activities or in the sharing of benefits. The FGRM provides an avenue to address and resolve these concerns and grievances. The NRS recognized that the FGRM consultation process had to be gender sensitive to guide the engagement process of these groups. The FGRM process is transparent, impartial, safe, timely, accessible, and provide special attention to women, the poor and marginalized and/or vulnerable groups.
Safeguards	Compensation payments and grievance redress. Compensation payments and grievance redress are very important in programme implementation, helping to address the concerns of affected communities. However, their effectiveness depends on their design and impartiality. When these mechanisms fall short, conflicts can arise, trust can diminish, and grievances may escalate, ultimately posing significant challenges to the success and sustainability of the program. Therefore, it's essential for program implementors to carefully consider and refine these mechanisms to ensure they are fair, transparent, and responsive to the needs and concerns of the communities they serve.

Capacity-Building	Access to information. Capacity-building programs can inadvertently exacerbate existing power imbalances within communities. Effective capacity-building should involve meaningful participation from all relevant stakeholders, including local communities, indigenous peoples, and civil society organizations. If certain groups are excluded or if their participation is tokenistic, it can lead to mistrust and conflicts, as they may feel that their interests and perspectives are not being considered. it is essential for REDD+ projects to prioritize transparency, engage in meaningful stakeholder consultations, and provide clear and accessible information to all relevant parties. This not only helps in building trust but also ensures that the benefits of REDD+ projects are more equitably distributed and that potential negative impacts are addressed effectively.

Broadly, the FGRM is operationalized in four steps. Parties seeking to have any REDD+ dispute resolved would file their complaint with the Safeguards Focal Person (SFP) at the district office (FSD) including the offices of the MMDAs within the ER program area where it will be received and processed before it is communicated through the Regional Safeguards Focal Person to the National FGRM coordinator to ensure transparency and the effective exercise of oversight responsibility.

1. If the parties are unable or unwilling to resolve their dispute through negotiation, fact-finding or inquiry a mediator chosen with the consent of both parties would be assigned to assist the Parties to reach a settlement.
2. Where the mediation is successful, the terms of the settlement shall be recorded in writing, signed by the mediator and the parties to the dispute and lodged at the FGRM registry. The terms of the settlement will be binding on all parties.
3. If the mediation is unsuccessful, the Parties will be required to submit their dispute for compulsory arbitration, by a panel of 5 arbitrators, selected from a national roster of experts.
4. The awards of the arbitration panel will be binding on the Parties and can only be appealed to the Court of Appeal. All questions of law would be referred to the High Court.

Support is provided by private sector, NGOs/CSOs, and other stakeholders necessary for helping local actors submit their grievances.

In practical terms, if a complaint is made to a focal person, it is his/her responsibility to notify the defendant or the other conflicting party. The focal person will have to acknowledge receipt

of the grievance. As a more pragmatic approach, there is the need for the complaint to be recorded using a complaint form to also serve as evidence of report and data base of complaints unlike previously where complaints were not documented. The information must be checked if there is the need for further information or clarification. Before the processing, the focal person is required to inform the defendant. All these is to improve governance of natural resources.

NRS has made provisions for FGRM hotlines and stakeholders have been made aware of this through sensitization and awareness creation.

7.1 **Estimated Time Frame for FGRM Process**

i.	Grievance Uptake, Record, Acknowledgement	-	5 working days
ii.	Process, Research and Fact-finding	-	15 working days
iii.	Response	-	5 working days
iv.	Implement Agreed Response	-	20 working days
v.	Total Process timeline	-	45 working days

8.0 INSTITUTIONAL STRENGTHENING AND CAPACITY BUILDING

Capacity building is viewed as more than training. It is human resource development and includes the process of equipping individuals with the understanding, skills and access to information, knowledge for successful implementation of the proposed projects. It also involves organizational development, the elaboration of relevant management structures, processes and procedures, not only within organizations but also the management of relationships between the different organizations and sectors (public, private and community).

In every engagement with stakeholders, the opportunity is taken to continuously build their capacities on REDD+ topics and provide updates on activities within the HIA and GCFRP as a whole.

2018

- In 2018, the Climate Change Directorate organized landscape engagements for key stakeholders (Ministries, Departments and Agencies (MDAs) and Metropolitan, Municipal and District Assemblies (MMDAs), Traditional Authorities, Local communities etc) within 10 Forest & Wildlife districts to sensitize them and build their capacity on Climate Change issues, REDD+ mechanism, REDD+ Safeguards, and the REDD+ Feedback & Grievance Redress Mechanism (FGRM) etc.

- Between the periods 7th- 8th February and 20th- 21st February 2018, 60 Safeguards focal persons were sensitized and trained on key global, donor and national level safeguards requirements for REDD+ implementation. Prominent among them were the World Bank (WB) Operational Policies and the United Nations Framework Convention on Climate Change's (UNFCCC) Cancun Safeguards. The SFPs were also taken through project screening as part of national safeguards requirements under the Environmental Protection Agency (EPA) Act, 1994 (Act 490) and Environmental Assessment Regulations 1999, (LI 1652) to understand the classification of projects and sub-projects for Environmental Impact Assessment or otherwise. Overall, the training consisted of 45 males and 15 females.

- The Climate Change Department (CCD) organized a two-day training workshop on the functions of Ghana's REDD+ SIS and FGRM at the Forestry Commission Training Centre (FCTC) in Kumasi from 19th - 20th June, 2018 for regional and district safeguards focal persons within the High Forest Zone of the GCFRP. The selected 71 Safeguards Focal Persons (SFPs) were trained on the functions of Ghana's REDD+ SIS and FGRM. Feedback and recommendations were solicited from the SFPs on where and how to improve the SIS and FGRM.

- Upon Completion of their initial sensitization and training on REDD+ Safeguards, the SFPs according to the Environmental and Social Management Framework (ESMF) developed for REDD+ implementation, led landscape level engagement of MDAs and MMDAs identified in Ghana's ESMF for Safeguards Implementation. These engagements occurred in 10 forest districts across all the six Hotpot Intervention Areas (HIAs) Identified for the GCFRP. The landscape level safeguards engagement was to build the capacity of decentralized institutions on REDD+ and REDD+ Safeguards requirements including FGRM. The districts are; Sefwi Wiawso, Cape Coast (Kakum National Park Area), Kade, Bechem, Juaso, Goaso, Nkawie, Ho, Begoro and Juaboso. Participants were made up of 580 males (about 70%) and 270 females (representing about 30%). These landscape activities were in active collaboration with Civil Society Organisations in Ghana comprising Civic Response, International Union for Conservation of Nature (IUCN) and HATOF Foundation.

2020

- The National REDD+ Secretariat (NRS) of the Forestry Commission with support from the World Bank through the AccelREDD+ Project organized a refresher training from 3rd – 5th March 2020 for Regional and District Safeguards Focal Persons (SFPs) across the GCFRP area. The training focused on safeguards instruments respected in Ghana's Country Approach to Safeguards (Ghana's Environmental Regulations), Cancun, World Bank Operational Policies, African Development Bank Safeguards and other donor safeguards requirements. The rationale was to equip SFPs with the requisite skills and knowledge on Ghana's Country Approach to Safeguards (CAS). SFPs would then have the ability to develop safeguards action plans, monitor safeguards compliance, resolving and/or reporting programme related conflicts using the Feedback and Grievance Redress

Mechanism (FGRM). A total of thirty-four (34) SFPs were trained (safeguards focal persons who are Forestry Commission's Assistant Regional, District and Park Managers) within the GCFRP area to ensure safeguards compliance at the regional and district levels.

Table 11: List of some Institutional strengthening and capacity building events

S/N	Institution	Topics
1	National REDD+ Secretariat	1. Training on safeguards for REDD+ Regional and District focal persons 2. REDD+ Safeguards Training- Goaso Forest District 3. Engagement of community members and other stakeholders on REDD+ safeguards 4. Training on SIS and FGRM for REDD+ regional and district safeguards focal persons 5. REDD+ safeguards landscape monitoring and training
2	Wildlife Division	1. Engagement of communities on livelihood improvements 2. Sensitization and education of communities on environmental protection
3	Forest Services Division	1. Engagement of fringe communities on fire management 2. Engagement of fringe communities on shade tree management 3. Engagement of communities on conflict resolution
4	Ghana Cocoa Board	1. Training of farmers on safe chemical application 2. Training of farmers on compost preparation and compost application 3. Training of farmers on buffer zone protection 4. Training of farmers on good agronomical practices 5. Training of farmers on wildlife protection and conservation 6. Training of farmers on proper disposal and storage of chemical waste. 7. Engagement of farmers on shade tree management 8. Training of farmers on additional livelihoods 9. Training of farmers on financial management and records keepings.

9.0 RECOMMENDATIONS AND NEXT STEPS

The proponents of GCFRP as well as implementing partners (from government, private sector and CSOs/NGOs) have exhibited strong dedication to sound environmental and social safeguards measures in the implementation of interventions/activities under GCFRP by demonstrating robust compliance to both national and the World Bank safeguards policies. By involving communities in methods that provide them with environmental and financial benefits, the programme has a strong potential to increase carbon stocks (achieve emissions reductions) in the High Forest Zones by reducing deforestation and forest degradation.

The recommended mitigation measures are sufficient to protect the environment and promote social growth.

Some recommendations to further enhance programme implementation were drawn based on monitoring of the safeguards implementation:

- There is a need to strengthen partnership and coordination with key stakeholders at the HIA level
- Regular and timely monitoring of activities/interventions undertaken by partners is encouraged
- Continuous stakeholder engagement with project proponents on safeguards implementation is recommended

ANNEXES

Annex 1: List of stakeholders engaged/trained

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Annex 2 – Forest reserves condition scores and biodiversity assessment

Table 12: Simplified table of key IUCN RedList Categories. Criteria shown are selected and not complete

		Criteria			
			Range area (km^2)*		Extinction probability (%)
Critically Endangered	CR	≥90 in 10 yrs	AOO <10 EOO <100	<250	≥50 in 10 yrs
Endangered	EN	≥70 in 10 yrs	AOO <500 EOO <5000	<2500	≥20 in 20 yrs
Vulnerable	VU	≥50 in 10 yrs	AOO <2000 EOO <20,000	<10, 000 or ≤ 5 sites	≥10 in 100 yrs
Near Threatened	NT	May qualify for threatened status in near future			
Least concern	LC	Unlikely to qualify for threatened status in near future			
Data deficient	DD	Insufficient information for a proper assessment			

*AOO = Area of occupancy, EOO = Extent of occurrence.

Table 13: Globally threatened, near-threatened and data deficient species recorded in Atewa Range Forest Reserve

RL	L	Group	Name	Common name
CR	1	Plant	Aubregrinia taiensis	
CR*	1	Plant	Monanthotaxis atewensis	
CR	1	Amphibian	Conraua derooi	Togo Slippery Frog
CR*	1	Amphibian	Phrynobatrachus afiabirago	Afia Birago Puddle Frog
CR	1	Mammal	Crocidura cf. wimmeri	Wimmer's Shrew
EN	1	Plant	Monocyclanthus vignei	
EN	1	Plant	Cola boxiana	
EN	1	Plant	Soyauxia talbotii	
EN	1	Plant	Vepris heterophylla	

EN	1	Plant	Okoubaka aubrevillei	
EN	1	Plant	Lecaniodiscus punctatus	
EN	1	Plant	Placodiscus attenuatus	
EN	1	Plant	Neolemonniera clitandrifolia	
EN	1	Plant	Tieghemella heckelii	
EN	4	Fish	Limbochromis robertsi	
EN	1	Amphibian	Hyperolius bobirensis	Bobiri Reed Frog
EN	1	Amphibian	Phrynobatrachus ghanensis	Ghana River Frog
EN	1	Amphibian	Amnirana occidentalis	Ivory Coast Frog
EN	1	Bird	Psittacus erithacus	Grey Parrot
EN	1	Mammal	Cercopithecus roloway	Roloway Monkey
EN†	1	Mammal	Cercocebus lunulatus	White-naped Mangabey
VU	1	Plant	Antrocaryon micraster	
VU	1	Plant	Piptostigma fugax	
VU	1	Plant	Xylopia elliotii	
VU	1	Plant	Alafia whytei	
VU	1	Plant	Cussonia bancoensis	
VU	1	Plant	Pararistolochia goldieana	
VU	4	Plant	Cordia platythyrsa	
VU	1	Plant	Dactyladenia dinklagei	
VU	1	Plant	Garcinia epunctata	
VU	1	Plant	Garcinia kola	
VU	1	Plant	Terminalia ivorensis	
VU	1	Plant	Tapura ivorensis	
VU	1	Plant	Shirakiopsis aubrevillei	
VU	1	Plant	Afzelia africana	
VU	1	Plant	Albizia ferruginea	
VU	1	Plant	Copaifera salikounda	

VU	1	Plant	Gilbertiodendron splendidum	
VU	1	Plant	Anthocleista microphylla	
VU	1	Plant	Cola reticulata	
VU	1	Plant	Nesogordonia papaverifera	
VU	1	Plant	Pterygota macrocarpa	
VU	1	Plant	Tarrietia utilis	
VU	1	Plant	Entandrophragma angolense	
VU	1	Plant	Entandrophragma candollei	
VU	1	Plant	Entandrophragma cylindricum	
VU	1	Plant	Entandrophragma utile	
VU	1	Plant	Khaya anthotheca	
VU	1	Plant	Khaya ivorensis	
VU	1	Plant	Leplaea cedrata	
VU	1	Plant	Leplaea thompsonii	
VU	1	Plant	Lovoa trichilioides	
VU	1	Plant	Turraeanthus africanus	
VU	1	Plant	Milicia regia	
VU	1	Plant	Lophira alata	

* Not yet assessed by IUCN but likely meeting the criteria for CR.

† Suspected to meet the criteria for CR.

L: location of record. 1 = inside forest reserve, 4 = in surrounding landscape

Table 14: Star rating system for plant species in Ghana

Star Rating	Description
Black	Highly significant in context of global biodiversity; rare globally and not widespread in Ghana

Gold	Significant in context of global biodiversity; fairly rare globally/nationally
Blue	Mainly of national biodiversity interest, e.g., globally widespread, nationally rare; or globally rare but of no concern in Ghana due to commonness
Scarlet	Common and widespread commercial species with potential seriously threatened by overexploitation
Red	Common and widespread commercial species; under significant pressure from exploitation
Pink	Common and widespread commercial species; not currently under significant pressure from overexploitation
Green	Species common and widespread in tropical Africa; no conservation concern
Others	Unknown, or non-forest species

Table 15: Ten most important tree species identified in forest ecosystems

Species	**Frequency**
Celtis mildbraedii	182
Broussonetia papyrifera	107
Triplochiton scleroxylon	106
Nesogordonia papaverifera	77
Ricinodendron heudelotii	69
Calpocalyx brevibracteatus	64
Hymenostegia afzelii	64
Diospyros canaliculata	53
Sterculia rhinopetala	47
Discoglypremna caloneura	40

Table 16: Ten most important tree species identified on cocoa farms

Species	**Frequency**
Morinda lucida	77
Persea americana	57
Citrus sinensis	31

Carica papaya	20
Terminalia superba	18
Milicia regia	16
Antiaris toxicaria	15
Ficus exasperata	15
Ficus vogeliana	12
Holarrhena floribunda	12

Table 17: Red and Scarlet star rating of plant species recorded in the forests

Species	**Star Rating**
Chidlowia sanguinea	Blue
Breviea leptosperma	Blue
Xylia evansii	Blue
Afzelia bella	Red
Amphimas pterocarpoides	Red
Anopyxis klaineana	Red
Antrocaryon micraster	Red
Canarium schweinfurthii	Red
Ceiba pentandra	Red
Celtis zenkeri	Red
Daniellia ogea	Red
Distemonanthus benthamianus	Red
Guarea cedrata	Red
Lovoa trichilioides	Red
Mansonia altissima	Red
Piptadeniastrum africanum	Red
Pycnanthus angolensis	Red
Terminalia superba	Red
Albizia ferruginea	Scarlet
Antiaris toxicaria	Scarlet
Entandrophragma angolense	Scarlet

Entandrophragma candollei	Scarlet
Entandrophragma cylindricum	Scarlet
Entandrophragma utile	Scarlet
Guibourtia ehie	Scarlet
Khaya grandifoliola	Scarlet
Khaya ivorensis	Scarlet
Milicia excelsa	Scarlet
Milicia regia	Scarlet
Nauclea diderrichii	Scarlet
Pouteria altissima	Scarlet
Pterygota macrocarpa	Scarlet
Tieghemella heckelii	Scarlet
Triplochiton scleroxylon	Scarlet

Table 18: Red and Scarlet star rating of plant species recorded in cocoa farms

Species	**Star rating**
Pycnanthus angolensis	Red
Albizia ferruginea	Scarlet
Antiaris toxicaria	Scarlet
Entandrophragma angolense	Scarlet
Khaya grandifoliola	Scarlet
Milicia excelsa	Scarlet
Milicia regia	Scarlet
Milicia regia	Scarlet
Pouteria aningeri	Scarlet
Pterygota macrocarpa	Scarlet
Triplochiton scleroxylon	Scarlet

Table 19: Red and Scarlet star rating of plant species recorded in the cropland

Species	**Star rating**

Afzelia bella	Red
Amphimas ptrecapioides	Red
Ceiba pentandra	Red
Celtis zenkeri	Red
Daniellia ogea	Red
Distemonanthus benthamianus	Red
Pouteria altissima	Red
Pycnanthus angolensis	Red
Terminalia ivorensis	Red
Terminalia superba	Red
Albizia ferruginea	Scarlet
Antiaris toxicaria	Scarlet
Entandrophragma angolense	Scarlet
Entandrophragma candollei	Scarlet
Milicia excelsa	Scarlet
Milicia regia	Scarlet
Pterygota macrocarpa	Scarlet
Triplochiton scleroxylon	Scarlet

Annex 3: List of approved and banned agro chemicals - EPA

TRADE NAME	ACTIVE INGREDIENT	PRE-HARVEST INTERVAL	RE-ENTRY INTERVAL	DOSAGE
AKATE MASTER	*BIFENTRIN*	21 DAYS	48 HRS	100 ML/ 11L of water
AKATE STAR 3 EC	*BIFENTRIN*	21 DAYS	48 HRS	20 ML/ 11L of water
ACTARA	*Thiamethoxam*	21 DAYS	48 HRS	17ML/11L of water
ACETA STAR	*Acetamiprid&Bifenthrin*	21 DAYS	48 HRS	120ML/11L of water
ACATI POWER	*Thiamethoxam*	21 DAYS	48 HRS	20ML/11L of water
PRIDAPOD	*IMIDACLOPRID*	21 DAYS	48 HRS	20ML/11L of water
VIPER SUPER	*INDOXACARB ANDACETAMIPRID*	21 DAYS	48 HRS	105ML/11L of water
GALIL 300	*IMIDACLOPRID AND BIFENTRIN*	21 DAYS	48 HRS	13ML/11L of water
AF CONFIDENCE	*CAPSAICIN*	21 DAYS	48 HRS	200ML/11L of water
SIVANTO	*FLUPYRADIFURONE*	21 DAYS	48 HRS	40ML/11L OF WATER
NORMAX 150	*ALPHA-CYPERMETHRIN TEFLUBENZURON*	21 DAYS	48 HRS	52 ML/11L WATER
BUFFALO SUPER	*ACETAPRIMID*	21 DAYS	48 HRS	98ML/11L WATER
THODAN SUPER	*LAMBDACYHALOTHRIN+ACETAMIPRID*	21 DAYS	48 HRS	110ML/11L WATER

A1	*IMIDACLOPRID*	21 DAYS	48 HRS	20ML/11L WATER
CALLIFAN SUPER	*BIFENTHRIN+ACETAMIPRID*	21 DAYS	48 HRS	20ML/11L WATER
AKATE GLOBAL	*THIAMETHOXAM*	21 DAYS	48 HRS	20ML/11L WATER
RAGENT 200	*FIPRONIL*	21 DAYS	48 HRS	17ML/11L WATER

FUNGICIDES

TRADE NAME	**ACTIVE INGREDIENT**	**PRE-HARVEST INTERVAL**	**RE-ENTRY INTERVAL**	**DOSAGE**
RidomilGold	*CuprousOxide&Mefonoxam*	21 DAYS	24 HRS (1 DAY)	1 Sachet/ 16L of water
Funguran-OH	*CupricHydroxide*	21 DAYS	24 HRS (1 DAY)	1 Sachet/ 16L of water
Metalm72WP	*Metalxyl*	21 DAYS	12 HRS (0.5 DAY)	1 Sachet/ 16L of water
*Fungiki **l** 50WP*	*Metalxyl*	21 DAYS	12 HRS (0.5 DAY)	1 Sachet/ 16L of water
Kocide2000	*CupricHydroxide*	21 DAYS	24 HRS (1 DAY)	1 Sachet/ 16L of water
CopperNordox75WG	*CuprousOxide*	21 DAYS	24 HRS (1 DAY)	1 Sachet/ 16L of water
Champion	*CupricHydroxide*	21 DAYS	24 HRS (1 DAY)	1 Sachet/ 16L of water

SidalcoDefender	*DicopperChroride trihydroxide,SC*	21 DAYS	24 HRS (1 DAY)	150ML/ 16L of water
Fantic	Benalaxyl M+Copper(I)Oxide	21 DAYS	24 HRS (1 DAY)	1 Sachet/ 16L of water
Forum R	homorph + 400 g/kg Co	21 DAYS	24 HRS (1 DAY)	1 Sachet/ 16L of water
Vamos 500SC	500 g/L Fluazinam	21 DAYS	24 HRS (1 DAY)	75ML/ 16L of water
Banjo Forte 400 SC	methomorph + 200 g/L	21 DAYS	24 HRS (1 DAY)	75ML/ 16L of water
Royal Cop 50WP	50% Copper (II) hydroxide	21 DAYS	24 HRS (1 DAY)	1 Sachet/ 16L of water
Delco 75WP	75 % Cupper (I) oxide	21 DAYS	24 HRS (1 DAY)	1 Sachet/ 16L of water

FERTILIZERS GRANULAR (ORGANIC)

TRADE NAME	**ACTIVE INGREDIENTS**	**DOSAGE**
Asaasewura	NPK 0-22-18+9CaO+75+MgO	3 Bags/ acre
Cocofeed	NPK 0-30-20	3 Bags/ acre
Cocoa Master	NPK-1-21-19+9CaO+65+6MgO +18	3 Bags/ acre
Dua Pa	NPK 3-25-18-7CaO+45+6MgO+0. 3(B+Zn)	3 Bags/ acre

Ferta Agra Cacao Sup	NPK 3-21e20+10CaO+55+5Mg O+0.5(B+Zn)	3 Bags/ acre
So Aba Pa	NPK 4-22-18+4CaO+45+5MgO +0.5B+0.2Zn	3 Bags/ acre
Adom Cocoa Fertilizer	NPK2-23- 18+8 CaO+6SO3+6MGO +0.5ZN+0.5B	3 Bags/ acre
Adehye Cocoa Fertiliz	NPK2-23- 18+8 eCaO+6SO3+6MGO +0.5ZN+0.5B	3 Bags/ acre
Sidalco	NPK 6:0:20 + Trace elements (Mg, Fe, Mn,Cu,Zn)	21 DAYS
Lithovit	Urea+Carbonates of Ca and Mg+Trace elements	21 DAYS

List of banned agro-chemicals

GAMALIN 20 (DDT)

UNTENT

COCOSTAT

KABAMALT

PARAQUATS

Banned pesticides

1. 2,4,5-T and Its salts and esters

2. Aldrin

3. Binapaeryt

4. Cantalo

5. Chlordane

o Clordinciorn

7. Chlorobenzilate

8. Dichlorodiphenyitrichloroethane(DDT)

9. Dieldrin

10. Dinoseb and its calts and esters

11. Dinitro-orthocresol (DNOC) and its salts (such as ammonium salt, potassium salt and sodium salt)

I2. Endria

13. HCH (aixed isomere)

14. Heptachlos

15. Hcxachlorobenxene

16. Parathion

17. Pentachlorophenol and its salts and esters

18. Toxaphene

19. Mirex

20. Methamidophos (Soluble Iquid formulations of the substance that exceed 600 g active ingredient/I)

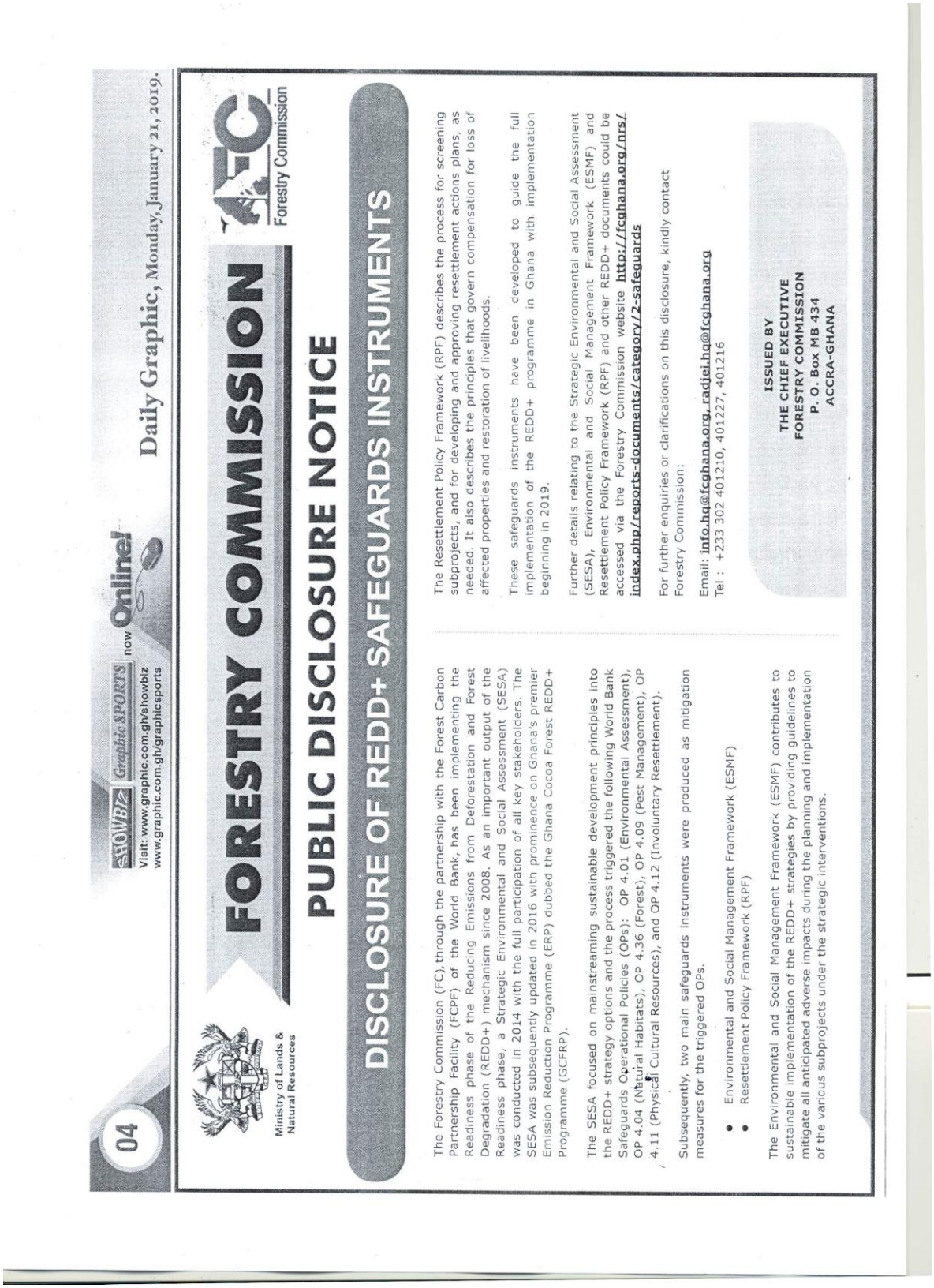
21. Methyl-parathion (emulsifiable concentrates (EC) with at or above 19.5% active ingredient and dusts at or above 1.5% active ingredient)

22. Monocrotophos (Soluble liquid formulations of the substance that exceed 600 g active ingredient/D

23. Parathion (all formulations - aerosols, dustable powder (DP), emulsifiable concentrate (EC), granules (CB) and wettable powders (WP) - of this substance are included, except capsule suspendions (CS))

24. Mosphamidon (Soluble liquid formulations of the substance that exceed 1000 1 active ingredient/l)

Annex 4: Public disclosure



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Daily Graphic, Monday, January 21, 2019.

Ministry of Lands & Natural Resources

FORESTRY COMMISSION

Forestry Commission

PUBLIC DISCLOSURE NOTICE

DISCLOSURE OF REDD+ SAFEGUARDS INSTRUMENTS

The Forestry Commission (FC), through the partnership with the Forest Carbon Partnership Facility (FCPF) of the World Bank, has been implementing the Readiness phase of the Reducing Emissions from Deforestation and Forest Degradation (REDD+) mechanism since 2008. As an important output of the Readiness phase, a Strategic Environmental and Social Assessment (SESA) was conducted in 2014 with the full participation of all key stakeholders. The SESA was subsequently updated in 2016 with prominence on Ghana's premier Emission Reduction Programme (ERP) dubbed the Ghana Cocoa Forest REDD+ Programme (GCFRP).

The SESA focused on mainstreaming sustainable development principles into the REDD+ strategy options and the process triggered the following World Bank Safeguards Operational Policies (OPs): OP 4.01 (Environmental Assessment), OP 4.04 (Natural Habitats), OP 4.36 (Forest), OP 4.09 (Pest Management), OP 4.11 (Physical Cultural Resources), and OP 4.12 (Involuntary Resettlement).

Subsequently, two main safeguards instruments were produced as mitigation measures for the triggered OPs.

- Environmental and Social Management Framework (ESMF)
- Resettlement Policy Framework (RPF)

The Environmental and Social Management Framework (ESMF) contributes to sustainable implementation of the REDD+ strategies by providing guidelines to mitigate all anticipated adverse impacts during the planning and implementation of the various subprojects under the strategic interventions.

The Resettlement Policy Framework (RPF) describes the process for screening subprojects, and for developing and approving resettlement actions plans, as needed. It also describes the principles that govern compensation for loss of affected properties and restoration of livelihoods.

These safeguards instruments have been developed to guide the full implementation of the REDD+ programme in Ghana with implementation beginning in 2019.

Further details relating to the Strategic Environmental and Social Assessment (SESA), Environmental and Social Management Framework (ESMF) and Resettlement Policy Framework (RPF) and other REDD+ documents could be accessed via the Forestry Commission website **http://fcghana.org/nrs/index.php/reports-documents/category/2-safeguards**

For further enquiries or clarifications on this disclosure, kindly contact Forestry Commission:

Email: **info.hq@fcghana.org, radjei.hq@fcghana.org**
Tel : +233 302 401210, 401227, 401216

ISSUED BY
THE CHIEF EXECUTIVE
FORESTRY COMMISSION
P. O. Box MB 434
ACCRA-GHANA

Figure 6: Disclosure of REDD+ safeguards instruments

Ministry of Lands & Natural Resources

FORESTRY COMMISSION

Forestry Commission

PUBLIC DISCLOSURE NOTICE

DISCLOSURE OF FINAL BENEFIT SHARING PLAN (BSP) FOR THE GHANA COCOA FOREST REDD+ PROGRAMME (GCFRP)

Ghana led by the Forestry Commission (FC) in partnership with the Forest Carbon Partnership Facility (FCPF) of the World Bank implemented the Readiness phase of the Global Climate Change Mitigation Mechanism; Reducing Emissions from Deforestation and Forest Degradation (REDD+) since 2008.

After a decade of REDD+ Readiness Activities, Ghana has developed its premier Emission Reductions Program dubbed the Ghana Cocoa Forest REDD+ Program (GCFRP), which has been accepted into the Carbon Fund of the FCPF for potential results-based payments. The Forestry Commission (FC) and Ghana Cocoa Board (Cocobod) jointly coordinate this Programme with the support of private sector and local communities.

The goal of the GCFRP is to significantly reduce deforestation and forest degradation in the High Forest Zone by promoting restoration of degraded landscapes, enrichment planting in forest reserves, climate-smart cocoa production, landscape level land-use planning, strategic policy reforms, integrated coordination and monitoring, law enforcement as well as risk reduction efforts within priority Hotspot Intervention Area (HIA) landscapes.

Subsequently, an Emission Reductions Payment Agreement (ERPA) which establishes the conditions of sale and purchase of any Emission reductions (ERs) from the GCFRP was signed between the Government of Ghana (GoG) and the World Bank as a trustee for the Carbon Fund in June 2019 for a period of six years.

A key condition for signing the ERPA is for Ghana to finalise its Benefit Sharing Plan towards full execution of the programme and eventual receipt of payments against demonstrated ERs as a mandatory Safeguards tool.

This notice therefore is to inform the public that the BSP document, which has been designed and developed through extensive stakeholder consultations as an equitable benefit sharing mechanism intended to distribute ERs payments transparently and accountably as articulated by the Programme Document is fully completed and endorsed by the Carbon Fund (CF). It describes the various beneficiaries, their eligibility, roles and responsibilities while specifying the scale and modalities for distribution. Additionally, the BSP describes the type of benefits to be transferred to beneficiaries, the timing of the distribution, and the conditions to be satisfied for the payment of the benefits. It also details the appropriate indicators for monitoring, measuring and verifying compliance with modalities for distributing benefits to beneficiaries.

The completion of the BSP represents a very significant milestone in the lifetime of the GCFRP and the Forestry Commission (FC) is appreciative of all national and sub-national stakeholder efforts for this achievement.

Further details relating to the Final BSP for the GCFRP could be accessed via the Forestry Commission website **http://fcghana.org/library.php** and **http://reddsis.fcghana.org/admin/controller/publications/Final%20BSP_Ghana_%20March%202020.pdf**

For further enquiries or clarifications on this disclosure, kindly contact us through the following email addresses and telephone numbers:

Email: **info.hq@fcghana.org, radiel.hq@fcghana.org**

Tel. numbers: +233 302 401210, 401227, 401216

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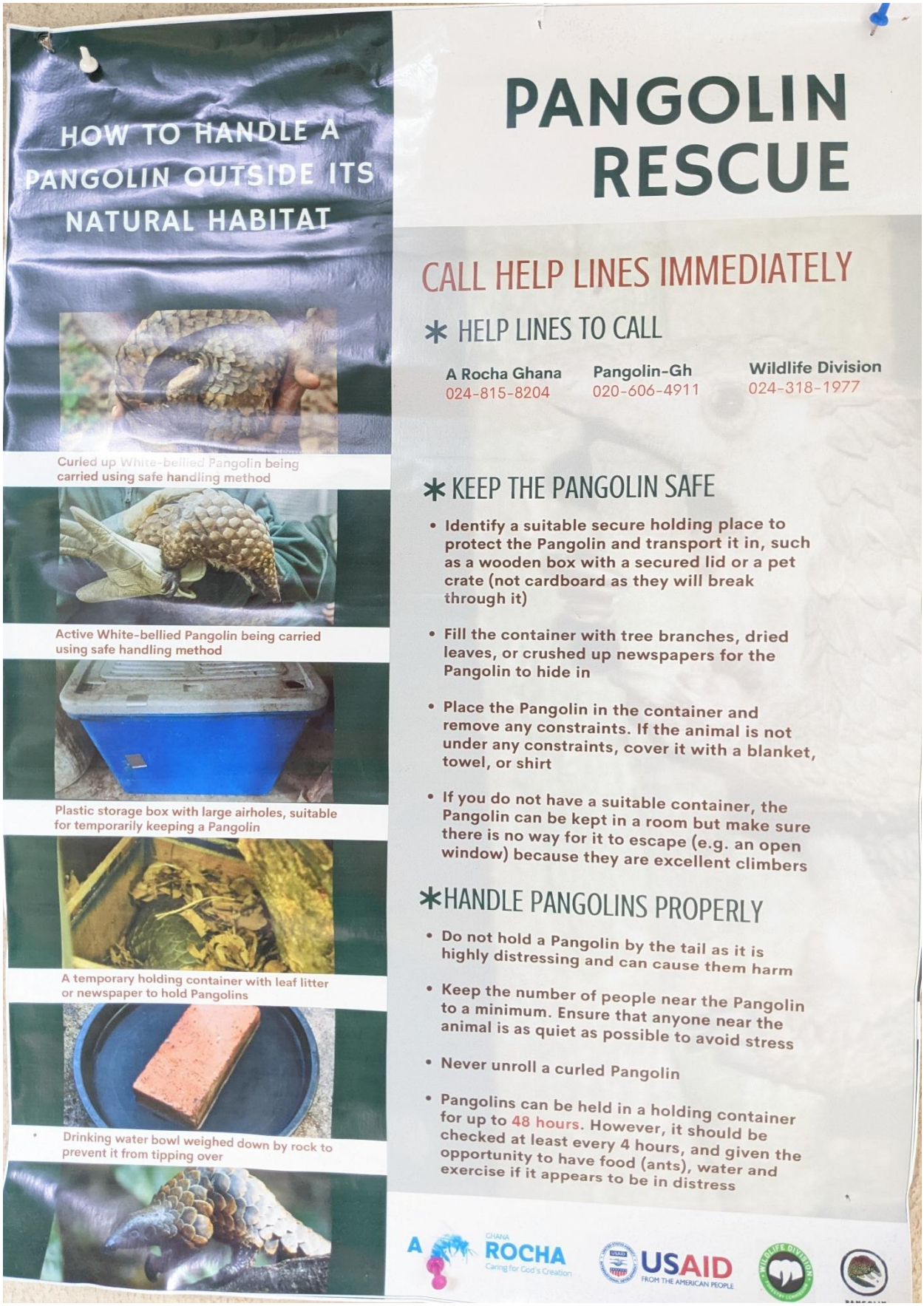
Figure 7: Disclosure of BSP for GCFRP

Annex 4: Awareness materials from stakeholders/partners



Annex 5: Ghana REDD+ programme screening checklist for environmental and social issues

Project Information: Name and Contact Details:				
Project Name				
Location	**Region/district/community (reserve/compartment)**			
	HIA			
Person undertaking the screening	**Name**		**Date of screening**	
	Designation			
	Address (Email, Phone number)			
Reviewer	**Name**			
	Designation			
	Address (Email, Phone number)			

Subproject Details: Attach location map (longitude-latitude coordinates (GPS reading) if available):	
Type and scope of activity *What will be done, who will do it, what are the objectives and outcomes*	
Estimated Cost	
Proposed Date of Commencement of Work	
Expected Completion of Work	
Technical Drawing/Specifications Reviewed	

Physical Data:	
Subproject Site area in ha	
Extension of or changes to existing land use	
Any plans for construction, movement of earth, changes in land cover	

Site Characteristics		
Adjoining Land Uses or Land Cover	South	
	North	
	East	
	West	
Proximity to a natural habitat e.g., wetland, river/stream, wetlands, forest reserves, protected areas etc.		
Proximity to a residence or any community resource or facility		
Proximity to a road		
Are there outstanding land disputes within the area?		
What is the status of the landholding required by the project (customary, lease, community lands, etc.)?		
What is the land currently being used for? (e.g., agriculture, gardening, etc.)		
Is there activity In Forest Reserve?		
Is there activity adjacent to Forest Reserve?		

Risks identification							
If implemented, would the activity Potentially	**Yes**	**No**	**If Yes, give a brief description**	**If Yes indicate the frequency of occurrence (likelihood)**			
				Very Rarely	***Rarely***	***Occasionally***	***Very Frequently***
Air Quality and Noise							
Cause air pollution? • generation of dust • generation of smoke • generate fumes? • generate emissions • Create objectionable odor affecting people?							
Expose workers or the community to substantial air pollution?							
Cause noise pollution							
Expose persons to excessive vibration and noise?							
Biological Resources and Natural Resources							
Occur in legally protected/nature reserve or Environmentally Sensitive Areas or a legally defined buffer zone; (forest reserves, national parks, Ramsar sites and wetlands, wildlife habitat areas, steep slopes, riparian areas, upland forests, vulnerable aquifers, biosphere							

reserves, World Heritage Sites, prime agricultural lands?							
Be located within 100m from a protected/nature reserve or Environmentally Sensitive Areas?							
Have effect on neighbouring protected/nature reserve or Environmentally Sensitive Areas (forest reserves, national parks, Ramsar sites and wetlands, wildlife habitat areas, steep slopes, riparian areas, upland forests, vulnerable aquifers and prime agricultural lands?							
Have effect on flora (vegetation or plants)?							
Have effect on fauna (animals, wildlife)?							
Interfere with the movement of any wildlife species or organisms?							
Lead to the clearing of forestlands and woodlands?							
Cause disturbance in natural habitats?							
Lead to modification of natural habitats?							
Drain wetlands, or be sited on floodplains?							
Lead to enhanced soil erosion due to repeated disturbance?							

Lead to road construction or rehabilitation, or otherwise facilitate access to fragile areas (natural woodlands, wetlands, erosion-prone areas)?							
Harvest wetland plant materials or utilize sediments of bodies of water?							
Involve the harvesting of timber resources?							
Involve the harvesting of non-timber resources?							
Promote in-forest bee keeping?							
Lead to increased hunting or the collection of animals or plant materials?							
Increase the risks to endangered or threatened species?							
Accelerate erosion by water or wind?							
Reduce soil fertility and/or permeability?							
Involve removing renewable natural resources such as forest products?							
Involve the extraction of non-renewable natural resources?							
Water Quality and Hydrology							
Occur within 100m distance from the nearest water body or drainage channel?							

Involve water extraction or abstraction from rivers, lakes, groundwater							
Have effect on potable water supplies to communities?							
Potentially contaminate surface water and groundwater supplies? • by generating liquid waste? • by generating liquid with human or animal waste? • by generating liquid with pH outside 6-9 range? • by generating liquid with an oily substance? • by generating liquid with a chemical substance? • by generating liquid with odor/smell?							
Lead to increase in surface run-off, which could result in flooding on or off-site?							
Potentially pollute or contaminate surface water?							
Potentially pollute or contaminate groundwater resources?							

Affect existing stream flow, reduce seasonal availability of water resources or cause changes in local natural water cycles?							
Agricultural and Forestry Production							
Affect existing or traditional agricultural production systems by reducing seed availability or reallocating land for other purposes?							
Lead to forest plantation harvesting without replanting, the burning of pastureland, or a reduction in fallow periods?							
Affect domestic livestock by reducing grazing areas or creating conditions where livestock disease problems could be exacerbated?							
Involve the use of insecticides, herbicides, and/or other pesticides?							
Hazardous Waste and Materials - *Will* the activity							
Lead to the generation of hazardous waste such as: • Pesticides, weedicides and other garden chemicals							
Lead to the transportation of hazardous waste?							
Lead to the recycling of hazardous waste?							

Lead to the storage and disposal of hazardous waste?							
Land Acquisition, Restrictions on Land Use and Involuntary Resettlement							
Require changes to existing land tenure system?							
Require acquisition of land (public or private, temporarily, or permanently) for its development?							
Potentially cause or aggravate land-use conflicts?							
Restrict land rights or land use rights?							
Restrict access to natural resources that cause a community or groups within a community to lose access to resource usage where they have traditional or customary tenure, or recognizable usage rights?							
Lead to the physical displacement? *Physical displacement occurs when individuals or communities are fully or partially no longer able to occupy an area and must relocate to a new location due to project activity.*							
Lead to economic displacement? *Economic displacement occurs when individuals or*							

communities are fully or partially restricted in their access to land or resources that are important to their livelihoods and economic well-being							
Cause a disruption on Power or other utility supply?							
Affect livelihood opportunities of people?							
Involve the use of direct workers? *Direct workers are people employed or* *engaged directly by the Borrower (including the project proponent and the project implementing agencies) to work specifically in relation to the project.*							
Involve the use of community workers? *Community workers are people employed or engaged in providing community labor.*							
Involve the use of contracted workers? *contracted workers are people employed or engaged through third parties to perform work related to core functions of the project, regardless of the location.*							
Involve the use of primary supply workers?							

Primary supply workers are people employed or engaged by the suppliers.							
Involve the use of Children?							
Social Inclusion							
Cause the exclusion of migrants, poor, persons with disabilities, youth, women, men from discussions related to the project?							
Are women and youth (vulnerable groups) considered in project implementation (decision making, farming activities, etc)?							
Are women and youth (vulnerable groups) benefiting from project implementation (access to tools, fertilizers, etc for farming activities)?							
Prioritize one demographic over the other in terms of labor?							
Unfairly allocate more benefits to a particular demographic?							
Give more opportunities to a particular demographic in the formation of governance structures?							
Cultural Heritage							
Involve excavations, demolition, movement of earth, flooding or other							

changes in the physical environment?							
Be located in, or in the vicinity of, a recognized cultural heritage site?							
Affect culturally important sites in the community such as sacred areas, burial grounds or cemeteries?							
Affect religious sites shrines, temples, mosques, churches?							
Affect any archeological or historical site?							
Community Health and Safety							
Lead to labour influx? *Labor influx consists of the rapid migration to and settlement of workers in the project area, typically in circumstances where labor/skills and goods and services required for a project are not available locally. Projects also stimulate speculative influx ("followers"), including those seeking employment or enterprises hoping to sell goods and services to the temporary project workforce, as well as "associates" who often follow the first two groups to exploit opportunities for criminal or illicit behavior (e.g., prostitution and crime).*							

Create conditions that can lead to community health problems such as community exposure to health risks and vector-borne diseases, communicable diseases, injuries, nutritional disorders, HIV/AIDS and infectious Diseases?							
Lead to increase road traffic, vehicles or fleets of vehicles for the purposes of the activity?							
Involve the use of Security personnel?							
Other Areas							
Production or use in any product or activity deemed illegal under Ghanaian laws or regulations or international conventions and agreements, or subject to international bans, such as pharmaceuticals, pesticides/herbicides, ozone depleting substances, PCB's, wildlife or products regulated under CITES.							
Does the proposed REDD+ intervention risk displacing emissions to another part of Ghana?							
Is there a risk that stakeholders who have grievances linked to the proposed REDD+							

intervention may not have an easily accessible, culturally appropriate avenue to address these grievances?							
Does the REDD+ intervention have, or increase the risk of negative impacts on gender (exclusion, discrimination, abuse etc.)							

Risks/Impact classification:

When considering the location of a subproject, rate the sensitivity of the proposed site in the following table according to the given criteria. Higher ratings do not necessarily mean that a site is unsuitable. They indicate a real risk of causing undesirable adverse environmental and social effects, and that more substantial environmental and/or social planning may be required to adequately avoid, mitigate or manage potential effects.

Risk areas	**Site Sensitivity (severity)**			**Rating**
	Low **(Risk that can impact on a small scale)**	**Moderate** **(Risk that can cause an impact but not a serious one)**	**High** **(Risks that can cause result in huge impact)**	**(L,M,H)**
Natural habitats (Biological Resources and Natural Resources)				
Air Quality and Noise				
Water quality and water resource availability and use (hydrology)				

Agricultural and Forestry Production				
Land and Farming Tenure (Land Acquisition, Restrictions on Land Use and Involuntary Resettlement)				
Socio-economic, Livelihood and Labour				
Hazardous Waste and Materials				
Social Inclusion				
Community Health and Safety				

Overall proposed subproject/activity risk classification: …….

E & S assessment comments based on site visit

Determination of environmental category based on findings of the screening: A ____B ____C ____

Recommendations for Instruments to be prepared

Recommendation:	**Tick as appropriate**	**Justification**
No further instrument required		
Requires the preparation of:		
Environmental Impact Assessment (EIA)		
Environmental and Social Impact Assessment (ESIA)		
Environmental and Social Management Plan (ESMP)		
Resettlement Action plan (RAP or ARAP)		
Environmental and Social Audit		
Hazard or Risk Assessment		
Social and Conflict Analysis		
Cultural Heritage Management Plan		
Biodiversity Management Plan		

Prepared by: ……. Date:

……

Potential Environmental and Social Issues That Require Referral to EPA or Using EA1 Form

	Benchmark and Issues	**Impact description**	**Yes**	**No**	**Remark**
1.	Statutory provisions	Is the proposed plantation area less than 40ha?			
2.	Statutory provisions (*see Natural Habitat Issues in Checklist*)	Are there any ecologically sensitive/ critical areas within the proposed project area (**refer to Annex 3)**			
3.	Protected areas and wildlife	Will project activities potentially impact natural habitats or critical wildlife species			

4.	Biodiversity loss	Will land use change or vegetation clearance lead to loss of exceptional flora/ fauna			
5.	Water pollution	1. Is there a local stream close to the project site? 2. Does it flow all year round? 3. How long does it take to walk to this stream 4. Do you think any project activity will affect this stream			
6.	Soil erosion	Are there steep slopes in the project area? Can you easily walk on the slopes without falling			

National Requirements			
If implemented, would the activity require permit or approval from the following national regulatory agencies?	**Yes**	**No**	**Justification**
Environmental Protection Agency			
Forestry Commission			
Water Resources Commission			
Ghana Standards Authority			
Food and Drugs Authority			
Minerals Commission			
Plant Protection & Regulatory Services			
Ghana Health Service			
District Assembly			

Clearance	
Name	
Designation	
Signature	

Date	

ANNEX ENVIRONMENTALLY SENSITIVE/ CRITICAL AREAS

NB: *Projects sited in these areas could have significant effects on the environment and the EPA could require a more stringent environmental assessment*
All areas declared by law as national parks, watershed reserves, forest reserves, wildlife reserves and sanctuaries including sacred groves
Areas with potential tourist value
Areas that constitute the habitat of any endangered or threatened species of indigenous wildlife (flora and fauna)
Areas of unique historic, religious, cultural, archaeological, scientific or educational interest
Areas that provide space, food, and materials for people practising a traditional style of life
Areas prone to disaster (geological hazards, floods, rainstorms, earthquakes, landslides, volcanic activity etc.)
Areas prone to bushfires
Areas classified as prime agricultural areas
Recharge areas of aquifers
Water bodies characterized by one or any combination of the following conditions: Tapped for domestic purposes Within controlled/ protected areas

Which support wildlife and fishery activities Mangrove areas characterized by one or any combination of the following conditions: With primary pristine and dense growth Adjoining mouth of major river system Near or adjacent to traditional fishing grounds Which acts as natural buffers against shore erosion, strong winds and storm floods Estuaries and lagoons Other coastal areas of ecological, fisheries or tourism importance or which are subject to dynamic change Wetlands Rivers Areas of high population density